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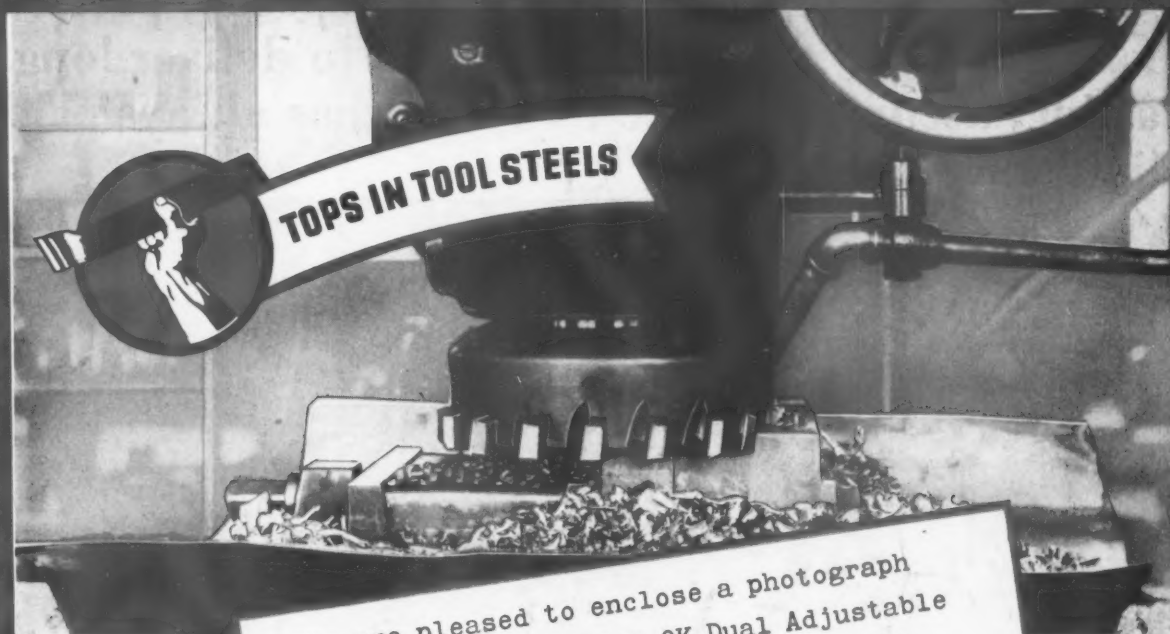
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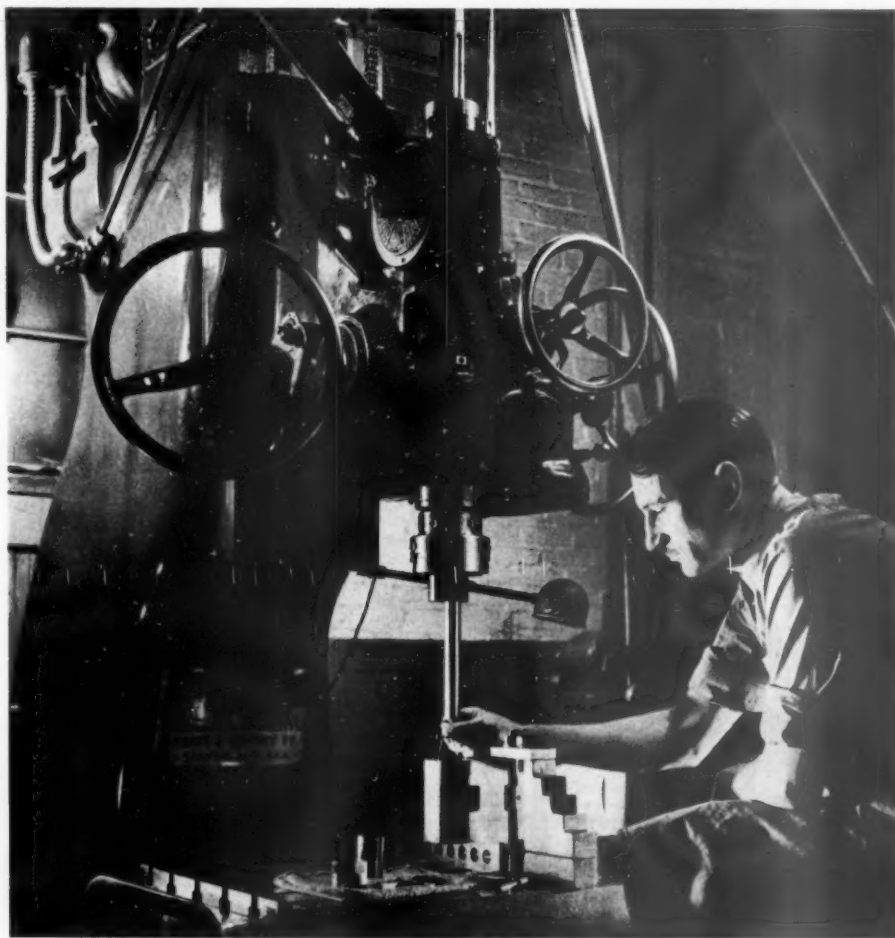
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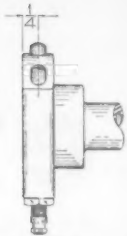
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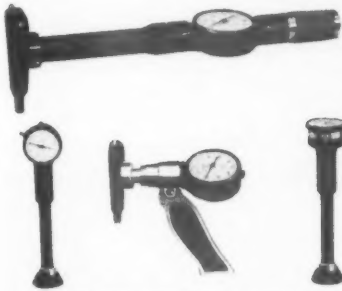
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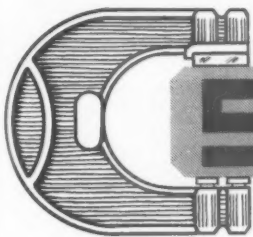
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GAGES

The Tool Engineer

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Vol. VIII

OCTOBER, 1939

No. 6

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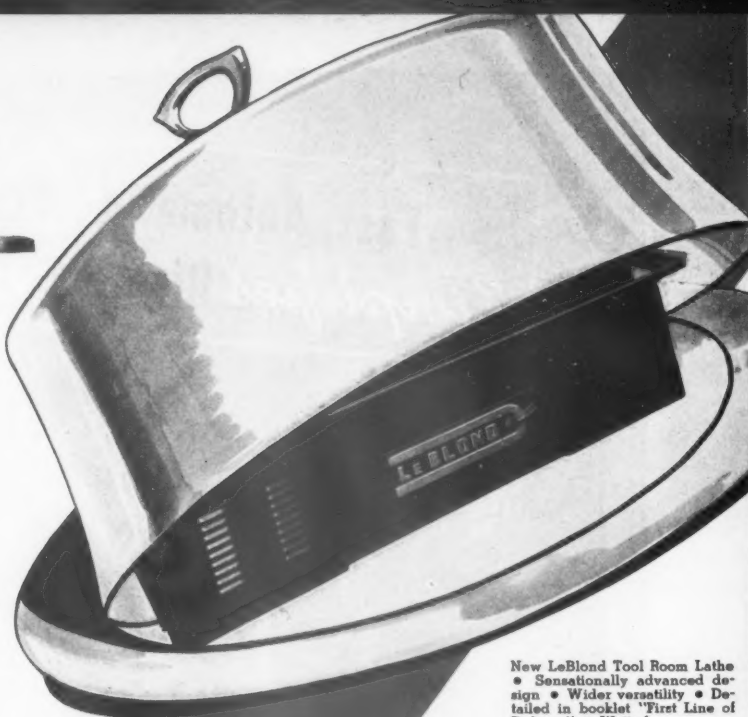
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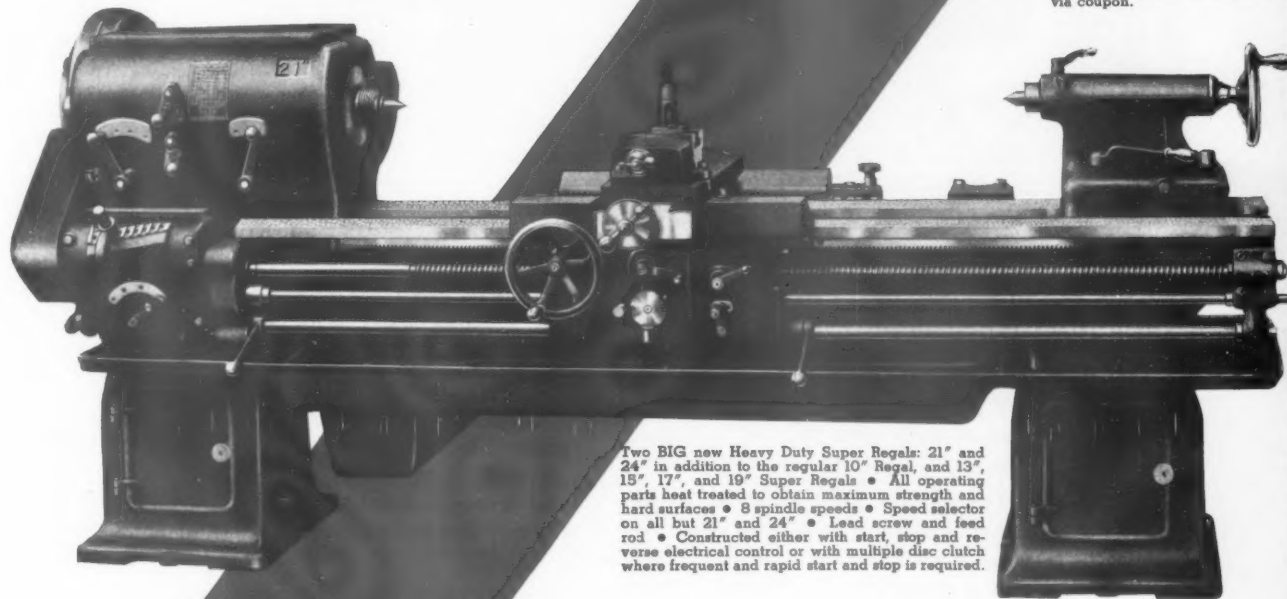
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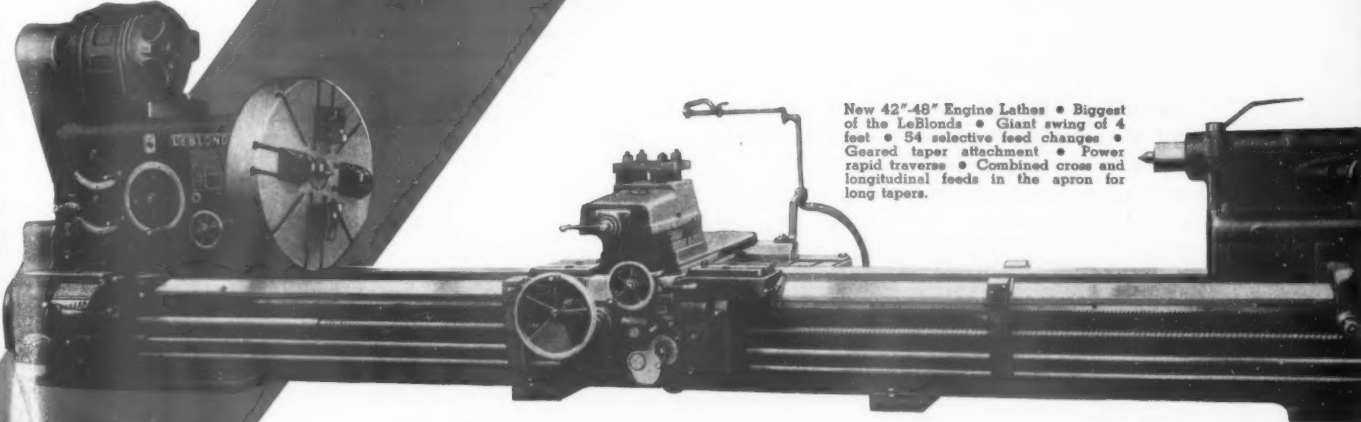
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EDITORIAL

Man Soars Toward the Sun—An Answer

By A. E. Rylander

H. G. WELLS, versatile author whose various books prove him to be at once imaginative and factual, has apparently joined the ranks of the defeatists. In his latest book (*The Fate of Homo Sapiens*) he contends that: "Humanity, which began in a cave, will end in the disease-soaked ruins of a slum." He says, among other things, that: "... new powers, inventions... and methods are not the unqualified enrichment of life that we had expected... they are proving dangerous in our unprepared hands." And so on, from gloomy surmise to gloomier conclusion, lightened by a faint ray of hope that re-education may avert total collapse of civilization.

Here is grist for the mills of the Brethren of Gloom—the anti-technologists—who have long been spreading the same line of bunk. One may wonder, however, if Mr. Wells might not have taken another view had he attended the A.S.T.E. Machine and Tool Exhibitions. There, at the Shows, was rebuttal of his thesis, there a school for his personal "re-education." Surely the men who conceived and built the various exhibits are not leading mankind toward the slums, but away from them, toward the sun. The automobile, for the production of which many if not the most of the exhibits were designed, has transported millions upon millions of city dwellers to field, greenwood and cool waters, as the airplane has broadened horizons and reduced trans-oceanic travel to a week-end hop, to and fro. Household appliances are emancipating women from household drudgery, as automatic heat extends leisure for the "man of the house," the whole conducive to a fuller life.

Mr. Wells attributes unemployment to the machine, but there is nothing original in that contention, which we concede with reservations even if he does hit below the belt. The machine is designed to replace hand labor, hence, a minor proportion of workers may lose their jobs when cost saving equipment is installed. But under ordinary conditions, as encouragement of business and industry, the idleness would be temporary with more employment in the offing. One of the pressing problems before industrial management today is re-employment of those idle who are "out," not because of the machine, but because the machine is not functioning to capacity.

Mr. Wells overlooks the fact that before there can be a machine it must be designed and built, which presumes employment for its construction. Every machine and tool exhibited at our Shows has netted many workers direct wages; it goes all the way back to the soil and the mines. Until sold, the machine is a frozen asset, but when delivered the payment permits the builder to make another machine and the buyer to produce more goods at, presumably, lower costs than were possible with previous methods. Even automatic machines must be serviced, hence, the logical conclusion that man and machine must work together. The automatic bottling machine, for example, does the work of many men, but in an age of high wages the producer can still sell a bottle of pop for a nickel.

Eager buyers crowd the "five and tens," the dry goods, hardware, furniture stores and automobile marts, where practically everything sold is made by

machine, and the groceries, where food is processed, canned, packed and even grown by machine. Does Mr. Wells imagine for one moment that the home owner, buying garden tools, lawn seed and shrubbery, intends to create a slum? Or that the housewife, shopping for curtains and whatnots, has any other object in mind than the beautification of the home? Why, Mr. Wells!

We can concede that, for a brief moment of the astral clock, invention has caught humanity unprepared. But, humanity is catching up. The Russians, 70 per cent illiterate two decades ago, now acquire mass education; the Turks, mired in medievalism before the advent of Kemal Ataturk, now emulate the most modern western civilizations. Thus, some two hundred million people—to cite merely two cases—emerge, at amazing pace, from mental thrall-dom to mass education, which, in time, presumes a superior culture. Is that a descent to the slums? As this is written, a mad genius has succeeded in plunging Europe into war, and the outlook is doleful enough. But, the protests of kings, presidents and potentates, spokesmen for their realms, shows that the vast majority of people want peace and the prosperity that peace begets. That, Mr. Wells, shows the trend of civilization; despite temporary checks the peoples of the world are passing the broad barrier that separates barbarism and civilization.

Creative genius has ever been far ahead of contemporary civilization, and this age in which we live has contributed more of genius than any previous era, the Golden Age of Greece not excepted. Miracles are becoming so commonplace that we no longer marvel at them. About the only place, apparently, that progress lags is in the legislative fields. Inadequate laws, for instance, hamper automotive traffic; the forty mile road is not geared for the 90 M.P.H. car. But, we acquire super-highways and grade separations as engineers assume control of traffic. The oldster enters the air transport with trepidation, but the young seem to be born air-minded; humanity learns to use its tools. Pestilence, famine and war, scourges of mankind, retreat before the onslaughts of science and humanitarianism, grudgingly perhaps, but they retire nevertheless. The science of eugenics, but faintly understood by the many and at present practiced in but a small section of the world, at once presages a superior mankind and cessation of war for territorial expansion.

For us, in the Tool Engineering field, this is not a case of whistling in the dark. We are no Pollyannas, but hard headed, practical men, creative and inventive naturally but with our feet on the solid ground of reality; our vision, futuristic though it be, focuses on a background of fact. We see young people crowding our schools, we see slums razed and replaced by habitable homes, we see civilization being streamlined and take a cold pride that we have a hand in shaping it toward a better end. We see progress, despite occasional arrest and recession, and as long as there is progress mankind definitely advances. Ours the creed that any fool can shoot down a well; leaders aspire to the pinnacle and take their fellows with them. Let Mr. Wells ponder that.



Let's turn the spotlight on the tools that do the actual cutting. They make—or break—your machining tool investment. Do you realize the amount of patient research and study that is behind the design, the steel, the heat treatment of every G.T.D. Greenfield Tap, Die, Twist Drill, Reamer or Gage?

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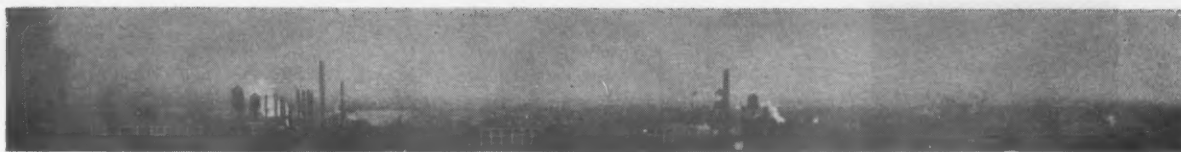
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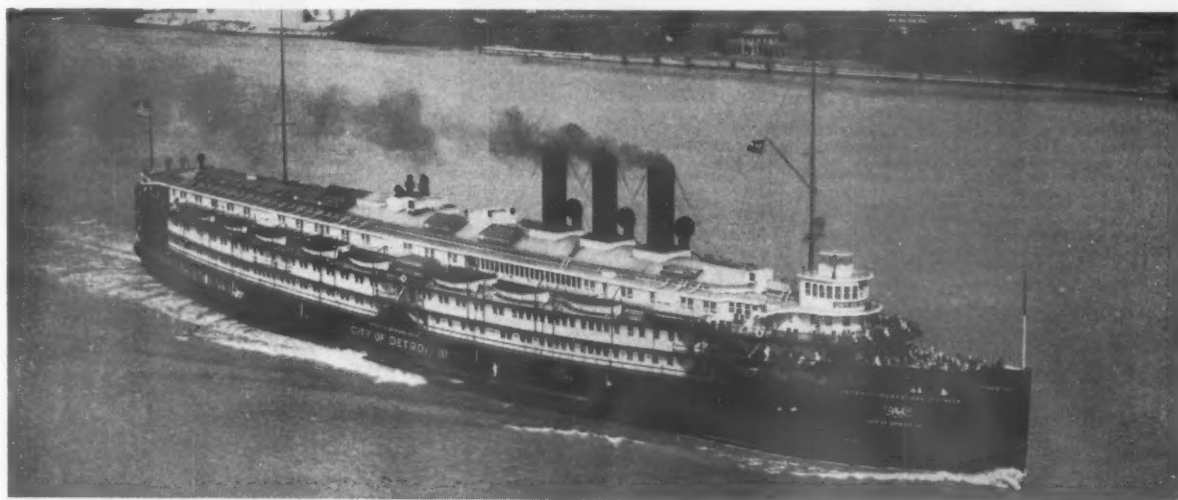
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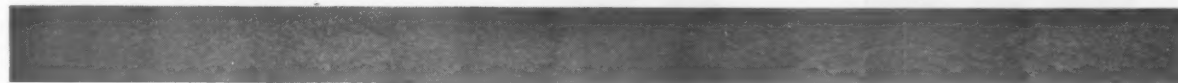
GREENFIELD



"The Show Must Go On"



Tool Engineers Meet Despite Last Minute Postponement of the Machine Tool Show



YES Sir! Mr. A.S.T.Eer and Mr. Tool Engineer everywhere, "The Show Must Go On." The American Society of Tool Engineers will hold their Semi-Annual Meeting at Cleveland, Ohio—October 6th and 7th regardless of the "indefinite postponement" of the National Machine Tool Builders Association Show which was scheduled for October 4th to 13th. Naturally, the cancellation of the Machine Tool Show at such a late date created an emergency, since all arrangements and commitments had been made, but Tool Engineers are used to emergencies and "Production Is Going Forward on Schedule."

Working with the host chapter, Cleveland No. 3, National Officers of the American Society of Tool Engineers have revised and added to the program to give A.S.T.Eers the utmost in a Semi-Annual Meeting at Cleveland—a two-day program, every minute of which is crammed full of interest and activity for those who attend. James R. Weaver, President of the A.S.T.E. upon hearing of the cancellation of the Machine Tool Show immediately called a meeting of

the Executive Committee and changed the dates of the A.S.T.E. Semi-Annual Meeting to October 6th and 7th (Friday and Saturday). Members and other Tool Engineers who attend this worthwhile meeting will have to be absent from their work only one day since a great many plants do not operate on Saturdays. Visits to some of Cleveland's most outstanding plants were arranged and considerable new machinery will be on display in addition to seeing the actual manufacture of many machines and tooling equipment.

It is with a spirit of cooperation and mutual helpfulness that Tool Engineers convene in this National Meeting and with a high resolve to better serve their employers and their country in any emergencies be it peace-time activity or national defense. Common problems are

Charles W. Thiede, Chairman, Detroit Chapter A.S.T.E. says "Plans are going ahead in full swing for our Semi-Annual Meeting in Cleveland. Although we will not now charter the Steamer "Detroit III" (shown above) we are pleased to announce that we are still making the trip—and at rates as previously quoted." Under the revised plans, the steamer will leave Detroit 11:30 p.m. October 5th arriving in Cleveland next morning, October 6th at 7:00 a.m.

discussed, solutions offered and Tool Engineers returning to their jobs are better prepared to meet their problems, more valuable to their employers because of a broadened perspective. A study of the program on the following page will indicate the value of the Meeting. The subject of the Friday night session (October 6th) is of particular interest to everyone connected with metal processing, as well as every man, woman and child since the development of the machine, if not understood, may lead to restrictions disastrous to the future well-being of all people. John M. Younger, Chairman of the A.S.T.E. Fact-Finding Committee, will give the second report of his committee studying the "Effect of the Development of the Machine on Employment and Our Standard of Living." On the same program will appear the Hon. Hamilton Fish of New York who will discuss the economic and political values of the substance of the report.

On Saturday (October 7th) the session on "Symposium on Bearings" promises to be highly educational. What do you know about bearings? When and where

A.S.T.E. Semi-Annual Meeting Will Be Held in Cleveland, October 6 and 7



Hon. Hamilton Fish, a distinguished scholar and gentleman of some 6 ft. 4, is of a distinguished lineage that antedates the Revolutionary War. At present he is ranking Republican member of the Committee on Foreign Affairs and a member of the Banking and Currency Committee. He is well qualified to speak on "The Economic and Political Effect of the Development of the Machine," his subject at the A.S.T.E. Dinner at Hotel Statler Ball Room, Cleveland, Oct. 6th.



Eugene Bouton, Production Engineer and Supervisor of Timestudy, J. I. Case Company, Tractor Works, Racine, Wisconsin. Mr. Bouton has contributed to the technical press on wage incentives and shop standards. He will discuss the "Application and Use of Plain Bearings as Applied to Machine Tools" in the A.S.T.E. "Symposium on Bearings."



Prof. John M. Younger is well known to our readers, being an A.S.T.E. member of several years standing and among the first of our educators to promote Tool Engineering in our colleges. He is a graduate of the practical School of Experience as well as an alumnus of Glasgow University, served as Chairman of the A.S.T.E. Fact Finding Committee.



James M. Weaver, President of the American Society of Tool Engineers, Director of Equipment, Inspection, Purchase and Tests, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania. Mr. Weaver will preside at the Semi-Annual dinner to be held in the Hotel Statler Grand Ball Room at 6:30 p.m. October 6th. On the program, after the dinner and entertainment, will be the Hon. Hamilton Fish and Prof. John M. Younger.



Karl L. Herrmann, speaker on the "Symposium on Bearings" program, is a practical Tool Engineer of very wide experience. Starting more than thirty years ago as a machinist and tool maker he has come up through the ranks to tool designer, executive on methods and standards in a large automobile plant, consulting engineer, to General Manager of the Bantam Ball Bearing Company. At present he is developing a new engine.



G. J. (Jack) Hawkey, Cleveland Chapter Chairman, who has aided National Officers in planning programs, plant tours and the many activities in connection with the Semi-Annual Meeting in Cleveland. His Chapter is host to all A.S.T.E.ers on this occasion and stands ready to assist the visiting Tool Engineers in every way to make their trip to Cleveland instructive, interesting and entertaining.

should plain bearings be used, where should anti-friction bearings be used? These are some of the questions that will be answered for you. This session will also throw considerable light on the whole subject of bearings. Add to these the many plant tours and the opportunity to meet Tool Engineers from everywhere and you will have a total

you won't want to miss.

All chapter officers in the nearly thirty chapters of A.S.T.E. from Coast to Coast have full information relative to boat trips as well as train excursions and many other details. There will be plenty of hotel accommodations at A.S.T.E. headquarters in Cleveland—the Statler—or at any hotel of your choice. If you

have already made your reservation please confirm it direct to the hotel or you may change to another hotel more to your liking, if you did not get your first choice on your previous reservation.

Come to Cleveland—October 6th and 7th. We'll be looking for you. A.S.T.E.ers from everywhere will be there.



This picture taken by a staff photographer of "The Tool Engineer" at the last Machine Tool Show in September, 1935, is indicative of the crowd expected via boat from

Detroit, judging from the number of taxis which met the boat to take the visiting Tool Engineers from the dock to the public auditorium.

AMERICAN SOCIETY of TOOL ENGINEERS 1939 Semi-Annual Meeting

CLEVELAND, OHIO

OCTOBER 6 and 7

HEADQUARTERS — HOTEL STATLER

"Production development is the road on which civilization must travel"

PROGRAM

Friday, Oct. 6—Cleveland, Ohio

7 A.M. to 9 A.M.—REGISTRATION. Mezzanine Floor, Hotel Statler (you must register to qualify for taking A.S.T.E. Plant Tours)

9 A.M. to 5 P.M.—PLANT VISITS. See Page 4 for schedules and plants.

6:30 P.M.—SEMI-ANNUAL DINNER AND MEETING. Grand Ball Room, Hotel Statler. Price \$2.00. Big floor show to follow meeting.

PROGRAM

Presiding: JAMES R. WEAVER, President A.S.T.E.
Director of Equipment, Inspection, Purchase, Tests
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.

"THE EFFECT OF THE DEVELOPMENT OF THE MACHINE ON EMPLOYMENT AND OUR STANDARD OF LIVING."

(Second Report of Committee).

JOHN M. YOUNGER

Chairman of A.S.T.E. Fact Finding Committee
Professor, Industrial Engineering, Ohio State University.

"ECONOMIC AND POLITICAL EFFECT OF THE DEVELOPMENT OF THE MACHINE"

HON. HAMILTON FISH

U.S. Congressman from New York.

Saturday, Oct. 7, Cleveland, Ohio

10 A.M.—TECHNICAL SESSION

Euclid Ball Room, Hotel Statler

"SYMPOSIUM ON BEARINGS"

Presiding: G. J. HAWKEY

Chairman, Cleveland Chapter, A.S.T.E.

President, The Cleveland Duplex Machinery Co., Inc., Cleveland.

"APPLICATION AND USE OF ANTI-FRICTION BEARINGS AS APPLIED TO MACHINE TOOLS"

STANLEY R. THOMAS

Chief Engineer, Bantam Bearings Corp., South Bend, Ind.

"APPLICATION AND USE OF PLAIN BEARINGS AS APPLIED TO MACHINE TOOLS"

EUGENE BOUTON

Supv. Time Study, J. E. Case Tractor Works, Racine, Wis.

"BEARINGS—THEIR USE AND MISUSE"

KARL L. HERRMANN

Engineer, South Bend, Indiana

DISCUSSION

S. L. CRAWSHAW

Application Engineer, Westinghouse Elec. & Mfg. Co. Nuttall Wks., Pittsburgh, Pa.

SCHEDULE OF PLANT VISITS

The Acme Machinery Co.
The Cleveland Graphite Bronze Co.
The Cleveland Twist Drill Co.
The National Acme Co.

The National Screw & Mfg. Co.
The Republic Steel Corp.
White Motor Co.

NOTE—Select the plants you wish to visit and register on Friday morning at registration desk at Hotel Statler.

SCHEDULE OF COMMITTEE MEETINGS

Friday, Oct. 6, 9 A.M.—Board of Directors Meeting, Parlor "C" Hotel Statler.

Saturday, Oct. 7, 10 A.M.—Membership Committee meeting, Parlor "A" Hotel Statler.

Saturday, Oct. 7, 10 A.M.—Standards Committee meeting, A.S.T.E. Headquarters Room, Hotel Statler.

Saturday, Oct. 7, 10 A.M.—Editorial Committee meeting, Parlor "D" Hotel Statler.



UNEMPLOYMENT

and Our Standard of Living

By
FORD R. LAMB,
EXECUTIVE-SECRETARY, AMERICAN SOCIETY
OF TOOL ENGINEERS
MEMBER A.S.T.E. FACT FINDING COMMITTEE

THE American standard of living, having developed beyond that of any other country, causes serious reflection to a thinking mind when the very things which contributed to the development of our standard of living are being attacked and would be destroyed by those who without proper basis of determination, place the blame for our present unfavorable economic situation at their door. Machines and tools which cause employment and raise our standard of living are being criticized, and it is proposed to place upon them a tax burden which would not only check their development, but may destroy their usefulness.

The American Society of Tool Engineers, reflecting on the many luxuries and comforts which we enjoy, became interested in a study of the effect of the development of the machine on employment and our standard of living and appointed a Fact Finding Committee to study the situation and report. A wealth of facts gathered by this committee resulted in the Preliminary Report which was given out in March, 1939. These facts showed in brief that we as a nation enjoy privileges and comforts denied to Kings a short century ago. That we enjoy living and working conditions far in excess of other nations and that modern conveniences which contribute to the ease and comfort of living are generally within the reach of the buying power of most of the people. The automobile, radio, washing machine, hot and cold running water, the telephone, electric light, airplane, air conditioning, a profusion of reading matter, books, news-

Above—Who wants to live like a king did a short century ago?
Below—Now—we even have strikes against the welfare and other charity agencies.



papers, magazines and a multitude of other things unknown a short century ago are accepted and used by modern civilization as necessities. These are all products of the machine, did not exist prior to the proper development of the machine and will cease to exist except in the possession of the very rich if the machine is taxed into uselessness.

We would not consider as rational any proposition which would eventually force us to go back to the general use of the outside toilet, to pump our water from the pump out in the yard, to ride horseback or go on foot in our travels, to record all writings with the quill pen, give up moving pictures, radio, music and entertainment, or in general to go back to what is known as the horse and buggy days. All of these things which mark the advance of civilization and improve our standard of living are machine made. What then is the sense of the attack on the machine and the proposal to curtail its development by taxation?

Our Preliminary Report reveals that from the time of the first weaving machine in England prior to the year 1800 up to the present time, workers have attempted to prevent the introduction and use of new developments in machinery because of fear of unemployment, yet the continued development of new machinery has been the greatest contributor to employment through the past two centuries. Peculiarly, the attack on the machine has always appeared during periods of depression such as have occurred with regularity throughout modern history, and it seems reasonable to presume that the present ill will for the machine would not exist if we were permitted to develop out of our present depression.

In spite of the fact that a preponderance of factual evidence proves that the machine has created employment and made possible our improved standard of living, we are confronted with the fact that we do have unemployment and that we now face the possibility of being forced to a lower standard of living unless the attack on the machine can be stopped and unless the evils contributing to unemployment be recognized and corrected.

The attack on the machine and the proposals to strangle its further development by taxation can properly be prevented only if the general public can be appreciative of the many blessings provided by the machine, for such steps are not taken contrary to general public opinion. It seems hardly possible that a thinking individual would deliberately attack and tear down the foundation of his existence although it has been done throughout all history by persons obsessed by incorrect opinions and information. The goose that laid the golden egg was killed because it could not produce according to the demand of its owner to lay two eggs per day. Men have thrown away their birthright through ignorance in their desire to satiate their selfish indulgence. A



Idle factories—fewer jobs—but taxes continue to increase.

general knowledge of the facts relative to the value and necessity of the machine in our lives should be understood by everybody so that they may not destroy the foundation of their existence.

Every citizen should ask himself "What am I willing to sacrifice out of my life in order that the machine may be curtailed in its function to contribute to the easement of man's labor and to the development of our civilization? Am I willing to give up all thoughts of having a modern, electrified and air conditioned home because the cost will never be brought down to my ability to buy? Am I willing to forget the possible enjoyment of Television which may soon be brought within my reach?" Would the traveler give up his privilege of traveling by air liner and his dreams of additional future speed, comfort and service? Would the business man give up his typewriter because punch presses used in its manufacture would be discontinued? Would the farmer give up his tractor and plow and go back to shoveling and hoeing the soil? Would the laborer go back to the 12 hour day, to the back breaking toil and ride his bicycle to work instead of driving his car so that the machine may be curtailed in its usage? Would Mr. Average Citizen give up his radio, his telephone and his bathroom? Would the barber go back to the business of pulling teeth because the dentist could not acquire equipment necessary to his calling without machines?

In fact, just where can the use of the machine be curtailed? It contributes to every function of our existence and cannot be curtailed in its usage. Neither can it carry a special tax burden else its further development will stop and we as a nation will stand still.

China stood still for many years, Ethiopia never did develop. They did not have machines. Would we like to be another Ethiopia? If it were possible (and thank God it is not) to stop development in America and continue as we are over a long period, we would find ourselves in the same position with respect to other nations as China is to Japan—totally incapable of defense against invasion and entirely subject to the will of any aggressor nation who wanted to exploit us.

We are living in a civilized world, in a developed country where educational facilities are not only available but compulsory to a great percentage of the population. Facts and information are available to all who want them. It should be the duty of our educational institutions to present and teach the facts relative to any question or action which may jeopardize our National standing and interfere with the future development of our race. Our National Laws are subject to the will of our people, and they alone are responsible for the trend of new laws. Anyone who has factual information on any vital subject would be neglecting his duty as a citizen if he withheld the facts from general knowledge.

If we are fortunate because of our special training and experience to have special knowledge concerning the value of the development of the machine, it is our duty to make our knowledge available not only to our legislature and government leaders, but to the man in the street who should know the answer.

But what about unemployment? We certainly have it—some 12 million strong—and there must be a reason for it. If the development of the machine

has consistently contributed to increased employment then some other factors must be exceedingly bad in the opposite direction. Suppose we examine some of the causes of employment and some of the factors governing employment.

Originally, prior to the development of the machine, people made their living from the land and from trade. Industry, such as existed at that time, was accomplished largely in the home or in connection with family groups. The entire family above diaper age was employed in the undertaking. In fact, only by complete family contribution and by working long hours could the undertaking be made to produce a substantial living.

The advent of the earliest machines began to change the home industry picture since few family industrial groups could afford to acquire the machine. This led to the development of financial structures capable of procuring and operating the machines. We may all learn of or recall the early family type of industry as represented by the lace industry where almost the entire family was used to produce patterns of lace representative of the product of that family. True, they did not produce very much, they couldn't, with their processes of manufacture. Neither was large volume required because the slow laborious hand methods of production made the cost of the articles entirely beyond the ability of any but the rich of that time to acquire. And from history, we learn of the early cloth in-

dustry, a family institution, and we also learn that a large portion of the clothing of the period was skins of animals and similar items but not of cloth. Machinery made possible the production of these items at prices within the buying power of most people, but it also forced the development of capital structure to acquire and operate the machinery. Further, it required the worker to leave his home and work with others in a place provided for that purpose and more marvelous than that, it made it possible for the worker to produce sufficient and to support his family without the necessity for continuous labor to the detriment of their physical development and education.

History and records show conclusively that employment has increased and our standard of living has improved in almost direct proportion to the development of the machine which has lightened men's labors and increased his productive ability. Could the farmer afford to drive and own an automobile if he had to cut his hay with a scythe and thrash his grain with a flail? Could we build roads, industrial plants, skyscrapers and viaducts if we equipped the workman with only a crude shovel and an axe? The W.P.A. may do it, but the answer will be clear to you if you try to pay men 60 cents per hour to move dirt with a shovel; if the farmer tries to pay \$3.00 per day for a man to plow his fields with a shovel; if the manufacturer tries to pay 80 cents per hour for a mechanic to cut gears with a chisel and file.

Wages can be based only on the productive ability of the worker, and without modern equipment wages must go down to whatever age of machine development we may propose to revert to. On the contrary wages can and will go up as we continue to increase the productive capacity of the worker by putting continually improved tools in his hands. We have seen wages of semi-skilled workers go 10 cents per hour to 25 to 50 to \$1.00 and in some instances to \$1.25 per hour, and during the same 50 years we have seen the working day go down from 16 to 12 to 10, to 9 and 8 hours per day, and in some instances to the 32 hour week. All this was made possible by improving the tools and machines he used.

Further and more important, we find that the greatest percentage of increase in employment has taken place in the most highly mechanized industries and the greatest decrease in employment has taken place in those industries which have made the least progress in the development of the tools and machines incident to their occupations.

All of this was reported and proved by undisputable facts and statistics in the A.S.T.E. Fact Finding Committee's Preliminary Report given March 13, 1939 at the Preview to the 1939 Machine & Tool Progress Exhibition at Detroit, Michigan.

Main Cause of Unemployment

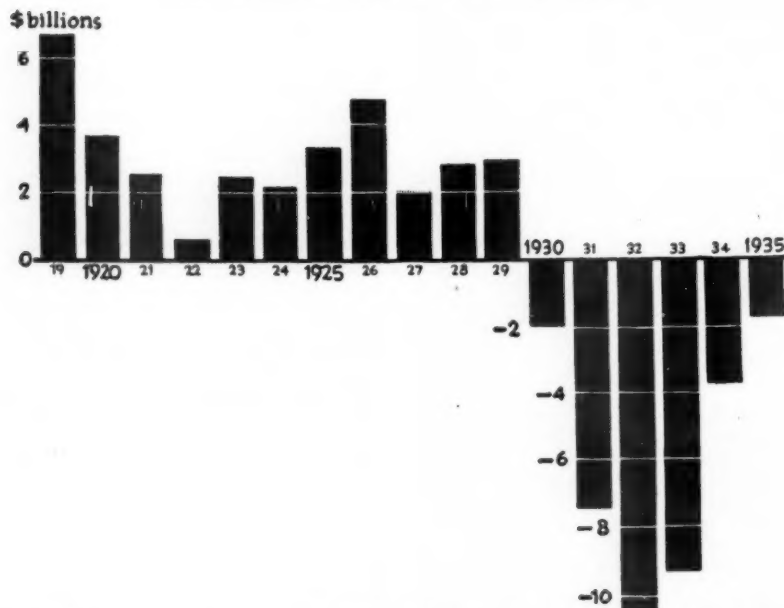
Of further interest, however, and vital to the subject of employment is the fact that over \$6,500.00 capital structure is required in a highly mechanized industry to provide one job. From statistics (National Bureau of Economic Research, Volume 1) we learn that during recent years, since 1930, the National Income and capital formation each year has been a negative value. Formerly, savings and profits of industry were plowed back into the industry to increase the net capital structure each year, and as a result of expended capital structure, additional jobs were created each year. Note the figures:—

In the years from 1919 to 1929 inclusive there was an increase of net capital formation each year as shown on the above chart. National Bureau of Economic Research has revealed that business capital is consumed at the rate of 8 billion dollars per year. This consumption of capital each year is represented by deterioration and disintegration of buildings and factories, obsolescence and necessary replacement of machines, losses by fire, floods, etc. This amount of durable wealth must be replaced each year if we maintain our usable capital structure.

The chart above shows the amount of National Income and capital formation produced each year from 1919 to 1935 and every \$6,500.00 of the net increase from 1919 to 1935 inclusive provided one more job. The approximately \$34,000,000,000.00 increase, about 3 billion dollars per year average, divided by \$6,500.00 per job means approximately 5,230,000 additional jobs

(Continued on Page 44)

BUSINESS SAVINGS, 1919-1935
Source: National Bureau of Economic Research.
"National Income and Capital Formation, 1919-1935"



In the six depression years following 1929 American business paid out 34½ billion dollars in excess of receipts, the equivalent of more than the savings of eleven years. These disbursements of earlier savings did much to cushion the depression, but they deprived business of funds essential for the maintenance and expansion of capital facilities.

For more elaborate discussion of the importance of business savings and their computation see also "Savings and American Progress," a pamphlet available from the Machinery and Allied Products Institute.

WHO SHALL DECIDE TOOLING ?

By **ANDERS JANSSON**

MEMBER A.S.T.E.

SHOULD the headline confuse the issue, because of its brevity, the question is: Who shall decide methods of tooling and metal processing in a manufacturing plant?—the Tool Engineers or the shopmen, the latter including all from department foremen to superintendents. Of course, one might say that management makes the final decision, but that would be true only in certain instances. Management defines broad policies rather than detail, usually delegates the processing of goods to one or more departments. In some plants the engineering division plans the processing arbitrarily, leaving nothing whatsoever to the discretion of the department foremen, in some there is collaboration between engineers and plant, in others—a minority—the foreman decides methods and specifies the kind of tools wanted.

Should Engineers Decide?

In the writers' opinion, the engineers should decide methods of processing. They have the whole picture, have a broader perspective than the department foreman who sees only his own job. Then, too, foremen are likely to have a defeatist complex; because a thing has been done just so right along there is no object in changing. There are plants in which the same general design of tools is repeated year after year, with minor changes due to variation in product. "What was good enough for grandpop is good enough for me." Now, we can't say that this is an altogether reactionary policy, because some concerns that adhere to old methods stay in business and make money. On the whole, however, modernization pays, unless the old tools

were so futuristic in original concept that they may now be considered modern. Such instances are exceptions.

While the writer holds that metal processing should be decided by the engineers, he does not advocate an arbitrary policy. Since the thesis is presented with a view toward industrial harmony and greater efficiency, it follows that full cooperation between engineering office and plant is the preferable plan. Unless there is involved a radical departure from previous manufacture, as the obsolescence of previous models and the making of an entirely new line, the foreman has acquired valuable experience, besides, a minority of foremen have designing ability, and, what is better yet, enthusiasm. The enthusiast is usually progressive, and progressive men are worth listening to. Foremen who combine designing ability, even if latent, together with enthusiasm, should be encouraged to express themselves. In any event, the foreman should be extended the courtesy of having a say regarding processing, even if his say is only acquiescence. After all, it is his department, in which he has—or should have—a keen interest.

In processing metals, i.e., projecting design of tools for manufacture, each unit should be tooled complete under charge of one lead man, each leader, in turn, reporting to a coordinator who has the whole program in hand. The coordinator can be the chief engineer, or a subordinate; he can even be from another department entirely, a desirable alternative, as will be shown later. The latter should know the desired plant layout, so that production may flow smoothly from unit processing to

final assembly. He should also know the plant equipment, so that the various jobs be allocated without too much demand on a certain machine. If, for instance, a certain job should be routed to the automatic presses—as Henry & Wrights—but it is found that a higher production is required of other parts; so that the automatics are scheduled to capacity, then certainly a substitute press should be provided. That is, unless the production is high enough to warrant purchase of another automatic.

In the writer's opinion, tool design and product design should be amicably divorced, which means that they should be separate departments operating on a basis of mutual accord and understanding. This is because of healthy criticism, to use that term, which is conducive to better tooling. Where the Tool Engineers can suggest a superior method of processing, by a redesign of product, then certainly the product should be modified, something that the average product designer is reluctant to concede, often will not concede if he is the final authority. But after all, the most futuristic design of product may fail to stand up if not designed for processing and assembly. In the same line of thought, the plant engineering should also be a separate department, since that would jack up the Tool Engineers. Healthy competition and emulation means a better product and more of it, as a rule.

Tool Engineers Have the Advantage

There is another reason for delegating processing to the Tool Engineers rather than the foremen. With changes

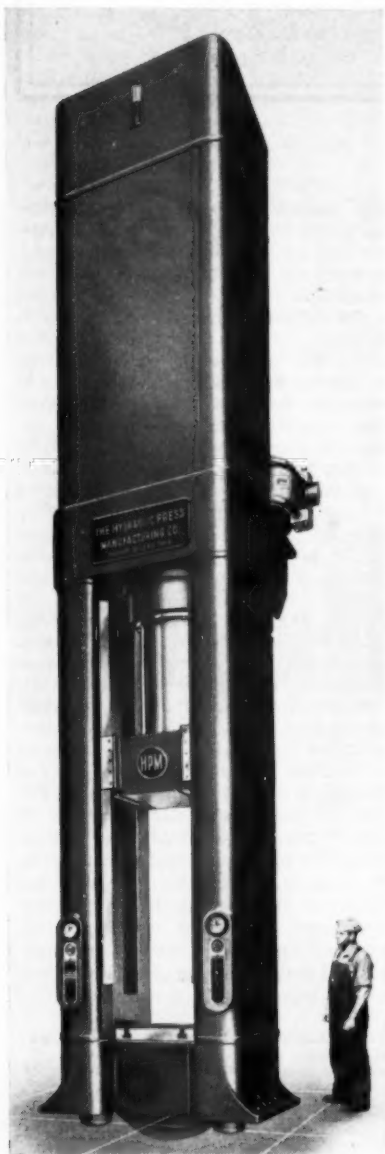
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IT'S NEW

It's all NEW—new machines, new tools, new methods, new metals, new materials—many of which you would have seen at the Machine Tool Show.

Below—Example of Shell Drawing and Tapering Press. Shell tapering presses are equipped with a mechanical ejector mechanism located beneath the press bed. Drawing presses are designed with a hole through the center of the press bed, through which the drawn shell is pushed and stripped from the punch.

Pressing surfaces of the H-P-M Press shown above are 30" x 30". Maximum daylight opening between slide and bed is 132"; maximum ram travel is 120". Other standard sizes can be furnished upon request. This press is made by The Hydraulic Press Manufacturing Company, Mt. Gilead, Ohio.



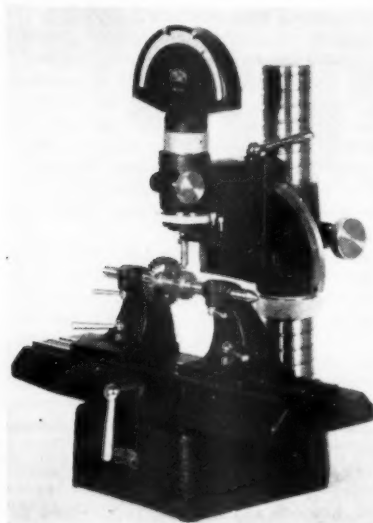
H-P-M Fastraverse Shell Drawing and Tapering Press

To meet the modern high speed production requirements in the manufacture of artillery shells, The Hydraulic Press Manufacturing Company, Mount Gilead, Ohio, has been cooperating closely with government arsenals in the design and development of modern presses to be used for this purpose.

The illustration shows a typical example of the type of press that is now popular in the production of artillery shells. This H-P-M Fastraverse shell drawing and tapering press is of the self-contained type with hydraulic pressure being generated by the Hydro-Power radial variable delivery type pump which is a part of the well known H-P-M closed circuit operating system. There are no operating valves between the pump and the main pressure cylinder. Ram travel is reversed by simply reversing the Hydro-Power pump, permitting the oil, which is the pressure medium, to flow in the opposite direction. This "patented" type of pressure application permits the press to operate smoothly and efficiently with "shockless" reversal.

Rapid ram advance and return is accomplished by the H-P-M Fastraverse application which permits the free flow

Zeiss Gear Orthotest, for speedy accurate testing of uniformity of pitch and concentricity of all types of gears up to 6" diameter, was to have been shown in the Machine and Tool Exhibition at the Central Armory, Cleveland.



of oil between the main cylinder and the overhead oil supply tank.

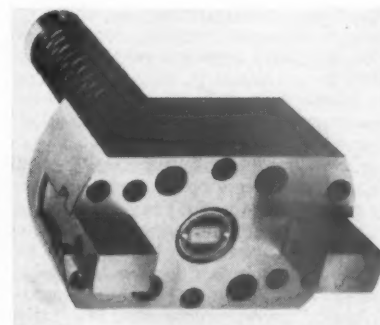
With the power unit mounted on a bracket securely fastened to the press head, no obstructive piping or power unit equipment is located around the base of the press. This type of design requires only a minimum of floor space for installation.

This press is modern in every detail of its design and smooth appearance and in the outstanding press performance and desired results which it achieves.

New Zeiss Developments

Carl Zeiss, Inc., 485 Fifth Avenue, New York, announces following new instruments: New Universal Measuring Microscope, range 8" x 4", for precision measuring of screw thread gages, lead screws, chasers, hobs, worms, etc., by the knife edge method. It can also be used for checking small cylinders, tapers, templets, form tools and small jigs. Readings on glass scales with microscopes and optical spiral verniers to .00005". This instrument has many essential improvements over previous models, including improved focusing, control of illumination, new circular table accurate to 1/2 minute of arc. Collimating Division Tester, consisting of a Theodolite and Collimator. Intended for precision indexing work, the combination provides accuracy to 1 sec. of arc. Gear Orthotest, for speedy, accurate testing of uniformity of pitch and concentricity of all types gears up to 6" diameter. Instrument is especially adaptable for checking small gear assemblies, separating errors in gears from errors in assembly.

New precision two-jaw chuck made by the Cushman Chuck Company, Hartford, Connecticut. This chuck will be made in both medium and heavy duty types.



New Cogsdill Tool Finishing

Cogsdill Twist Drill Company, Inc., Detroit, is out with a new and revolutionary process of cutting tool finishing, known as Ultra Keen. The new method of applying abrasives to hardened steel is fundamentally different from commercially accepted practices, Cogsdill claims. The specially designed finishers used have a variable multi-motion that allows the abrasive to literally "wear" a metallic surface to crystalline smoothness, eradicates surface defects caused by previous mechanical operations by totally removing defective surface metal. Ultra Keened cutting edges, it is claimed, are "base metal," i.e., that crystalline structure from which scratches and defects have been removed and is nearest to being wear resistant.

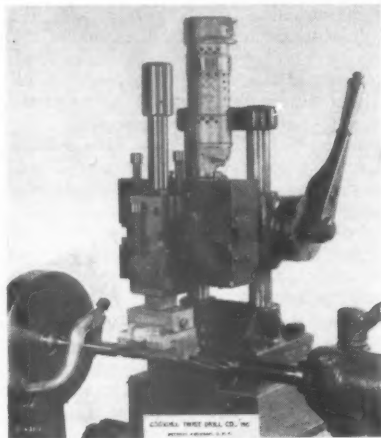
New Sidney Lathe

The Sidney Machine Tool Company, Sidney, Ohio had intended to show their new Sidney lathe, a description of which follows.

The new Sidney lathes are built in sizes from 14" to 36" swing in either 8, 12 or 16 speed headstocks, embodying a number of new exclusive features, two of which are covered by the accompanying photographs.

The illustration on this page shows a 16 x 30" center lathe. The new Sidney lathe is a complete anti-friction bearing machine with anti-friction bearing mounted in the headstock, end gearing, gear box, apron, lead screw and feed rod, and provided with ball thrust bearings on all adjusting screws. It is also provided with automatic lubrication in the headstock through pump and piping including the apron and carriage mechanism, with a centralized reservoir for lubricating the gear box, thus requiring very little attention of the operator to assure ample lubrication. The gears throughout the entire lathe including all other wearing parts are of heat treated and hardened steel as assurance of resisting wear under the heavier demands that lathe equipment is put to.

Cogsdill Twist Drill Company, Detroit, have introduced the "Ultra-Keen" method for finishing cutting tools, as shown below.



The claim for this type of transmission is that—First, through the use of herringbone gears more tooth contact results in greater strength and smoother action thus eliminating all gear tooth marks on the work with no end thrust throughout our entire transmission.

Second, that by having all of the herringbone gears constantly in mesh the maker is able to allow a minimum amount of back lash in the gears assuring smooth and chatter-free operation.

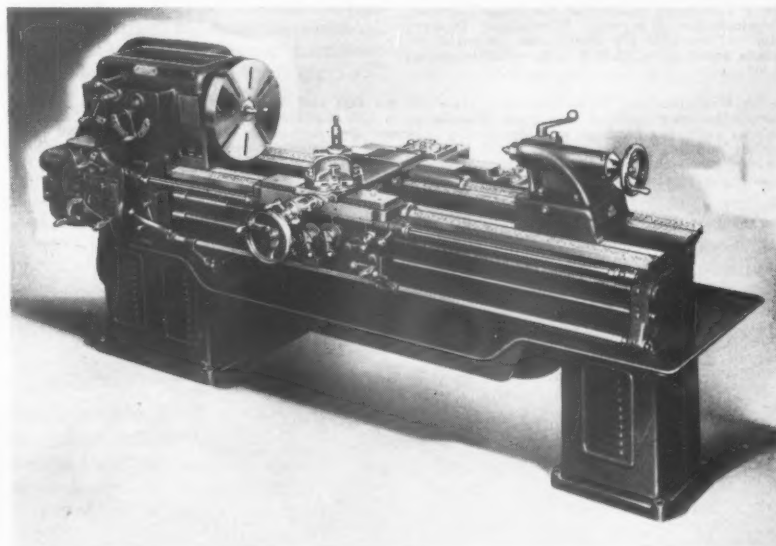
Third, that the herringbone gears constantly in mesh supplemented by the internal and external gear tooth clutches hold a measurable amount of back lash through any combination of gears measured on the circumference of a 16" diameter face plate to $\frac{1}{4}$ of an inch, thus offering a great advantage especially when doing intermittent work.

Fourth, the maker calls attention to a center bearing on both the spindle and intermediate shaft which adds greatly to the rigidity of the headstock in eliminating vibration under the higher speeds and feeds used. This likewise places the bearings throughout the entire headstock at 8" intervals.

The new Sidney lathe is likewise provided with a new type of bed having four longitudinal walls with cross girts spaced at 12" intervals. They are also supplemented by additional girts in between the longitudinal walls. Our thought in designing this bed was to arrange for proper metal distribution to insure rigidity with accurate and permanent alignment resisting it from any possible bending or twisting strain.

The above two features—namely, the herringbone geared headstock with internal and external gear tooth clutches and the four walls will be incorporated in the new Sidney lathes with other units of new design with important exclusive features.

The new Sidney, 16 x 30" center lathe, completely an anti-friction bearing machine. Anti-friction bearings are used in the headstock, gearing, gear box, lead screw and feed rod. A complete description of this new model appears on this page.



Atkins New Electric Valves

E. C. Atkins and Company, Indianapolis, announce a line of electrically operated valves, in sizes from $\frac{1}{4}$ " to 3". Known as Atkomatic, the parts are of finest bronze and stainless steel, have a wide range of uses, for air, gas, water, steam and oil. Electric control provides fine timing, with operating pressures 1 to 300 pounds, with maximum steam pressure 150 pounds. Will operate on very high back pressure. The Atkomatic has features of especial appeal to designers of automatic equipment.

New Cushman Power Chucks

The Cushman Chuck Company, Hartford, Conn., has contributed important developments in chucking technique, including new power units for power chucks, power wrenches for production machines, new light duty precision chucks for the lighter cam-lock and long taper key driven spindles, as well as new power operated chucks among other innovations. A new Precision 2-jaw Chuck in both medium and heavy duty types is shown in illustration on the opposite page.

Showing the new Sidney Lathe headstock with cover removed exposing the herringbone gear transmission that is provided with a new development in the machine tool field for speed changing—namely, internal and external gear tooth clutches.



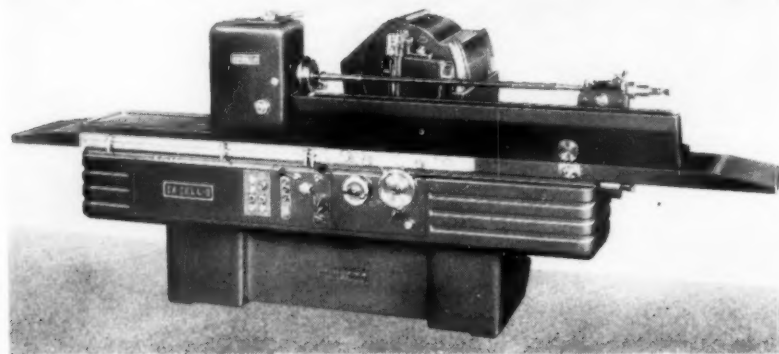


The New DOALL 26 with 26" throat, power work feed, 30" x 30" work table and many other new features and refinements was to have been shown in Cleveland by the Continental Machine, Inc., of Minneapolis.



Allis-Chalmers Vari-Pitch Speed Changer a newly developed product of the Allis-Chalmers Manufacturing Company, Milwaukee. Twelve sizes of this unit are made and designed to handle loads up to 75 H.P. with variable ratios of 3:1.

Ex-Cell-O Corporation, Detroit, were to show for the first time their new thread grinder, pictured below. This new machine will grind threads up to 12" diameter and up to 50" long on work as long as 115". The machine is hydraulically operated and controlled, will grind right or left hand threads and has many new and novel features, such as grinding wheel infeed, automatic wheel dresser, backlash compensator etc.



The New "DoAll 26"

Continental Machines, Inc. of Minneapolis, were to have introduced their new "DoAll 26" at the special showing in Cleveland, Ohio, between October 4th and 14th. The new machine has a 26" throat depth. The company now offers DoAll machines with capacities of 16", 26" and 36". The new "DoAll 26" is of rugged, arc welded steel construction, thus making possible the modern streamlined appearance of the machine.

Capacities in this new model have been greatly increased. It has a 30 x 30" large work table, having the strongest box type construction. The machine can employ precision band saws of any width from 1 m.m. up to and including 1 inch, whereas previous models accommodated band saws up to 1/2" wide. The machine will, also, employ a new 1/2" wide file band in addition to the 3/8" wide and 1/4" wide file bands.

A newly designed automatic power work feed is one of the features of this machine. It not only exerts pressure into the saw, but throughout the contour as well. Any curve can be cut by hand wheel control. No hand pressure is required for any type of cut. A spiral part cut from 2 1/2" thick forging steel was machined with the feed in only 1 hour and 48 minutes. The automatic feed greatly amplifies the machine's work capacity.

The machine table can be inclined in any direction, forward, rearward or sideways. The maximum tilt is 45°, permitting the cutting of any angle. The table is inclined by means of a hand screw to facilitate the quick and accurate setting to any angle.

Another feature is the frictionless cutting attachment which permits easy machining of heavy work. Improvements have been made in almost all of the assemblies of the machine, with the idea in mind of providing easier operation on a wide range of work. The machine is massive and rugged. It weighs over 2,000 lbs. A 1 1/2 H.P. motor drives the machine through the company's Speedmaster moulded bakelite variable drive and through a silent transmission. The transmission contains eight helical

gears, which run in oil. A speed range from 50 to 1500 lineal feet per minute is provided. The exact speed is indicated on a tachometer dial. The correct speed and type of saw or file to use for 48 different materials is given on a "Job Selector Dial."

Two new machining processes made possible by the redesigned DoAll machines were to have been exhibited in Cleveland.

The new rugged DoAll machines make possible another machining process—the production of short run "forgings." A poppet valve lever is a typical example of a short run "forging." Twenty of these levers were required for experimental use. To make forging dies for twenty levers, of course, was out of the question. To machine them by any other method would have been costly and the completion of the parts would have been greatly delayed. This three dimensional part was machined on the DoAll in only three hours. A wide use of these two new machining processes is now being made on a variety of "stampings" and "forgings."

Allis-Chalmers Vari-Pitch Speed Changer

Allis-Chalmers Manufacturing Company, Milwaukee, has a newly developed line of Vari-Pitch speed changer units which includes 12 sizes designed to handle loads up to 75 H.P. with variable ratios of 3:1. In connection with all these sizes the company has developed a brand new base especially designed for use in compact installations where floor space is at a premium. The motor and base are mounted directly above the speed changer as shown in illustration. Judging by the picture, the outfit looks as if it "could take it."

Ex-Cell-O New Precision Thread Grinder

Ex-Cell-O Corporation, Detroit, introduces a new style (No. 50) Precision Thread Grinder, for grinding threads up to 12" diameter and 50" long on work up to 115 inches between centers. The machine is hydraulically operated and controlled, will grind left or right threads, single or multiple, U. S. Std., 60° Sharp V, 29° Acme, modified Buttress and Whitworth forms, as well as special forms, symmetrical or unsymmetrical.

Interesting automatic features of the machine include: grinding wheel infeed, to compensate for amount dressed off wheel, automatic wheel dresser and automatic backlash compensator, for grinding in both directions. This insures that, at each reversal, the wheel will follow same thread track. Work can be reversed with wheel in the cut; undercut or having wheel run of work is not necessary. Complete literature on this as other Ex-Cell-O equipment can be had by the interested.

New Ampco Metal Applications

Ampco Metal, Inc., Milwaukee, Wis., has developed outstanding and noteworthy applications of Ampco Metal in machine and tool construction, espe-

(Continued on page 52)

TOOL ENGINEERS MUST QUALIFY for GREATER RESPONSIBILITIES

By DON FLATER

WORKS MANAGER, CHRYSLER DIVISION
CHRYSLER CORPORATION

NO pretense will be made in this article to establish or instruct the proper method, such as punctuation, paragraph, composition, etc.; these details are strictly a matter of study and exercise.

The inclination and ability to compile and write a complete and comprehensive report is a qualification for Tool Engineers holding responsible positions in industry to strive to attain and is one highly regarded and sought after by Management. The main reason why we do not possess these qualifications is the fact that we do not allot sufficient time and effort to actually learn how to write an intelligent report or subject analysis. Anything that we realize we are not capable of doing well we are, as a rule, reluctant to attempt, therefore, one of the reasons why satisfactory accounts are hard to obtain. It would not be advisable to attempt to establish a standard on how they should be written because executives requesting reports demand different methods of compiling them. For instance, some require the summaries as a first sheet and some as a conclusion, whereas others want them broken down into items throughout.

Know Your Reader

Another reason for failure is that the writer does not learn to know the reader for whom he is making up the analysis and respect the manner in which he wishes the information submitted, as every executive has his own pet type. Be certain that you are familiar with what information he desires to obtain. Have no fear of the reader, he wants the correct data whether it pleases him or not. A report should never be written to fit what you know or surmise is the reader's impression of the data asked, but submit facts, as he may be misinformed.

It is the intention to point out items that are usually judged harshly and it is believed that if handled carefully you will find yourself improving and will be submitting data that will meet with favor with a reader. The fundamental requirement that must be acquired is that of having a clear definite idea of just what a report is. It



Writing a clear concise subject analysis or report need not be difficult if you learn to know what your reader wants. Be sure your data is correct whether it pleases him or not.

should be an accurate statement of facts based on authentic sources of information. The above definition is a key to the whole matter in that so many reports do not consist of accurate statements of facts, brought about by lack of proper analysis by the party compiling the report, or by poor judgment in the selection of the sources from which the information is obtained. If individuals' opinions and fallacious conclusions were omitted from every report, how much easier it would be to get the facts and how many more facts would come to the surface. This is one of the reasons why it is advantageous to specify your sources of data, and to have more than one source to determine whether or not they conflict. If in your judgment, based upon what knowledge of the subject you may have, the data do not appear right, you should further investigate carefully to be certain that the material gathered together is correct, and have all of this material at hand together with your ideas and a complete analysis of the subject before you attempt to write anything. Try to improve your ability to compile information that is concise, accurate, complete, comprehensive, and intelligent by obtaining criticism from

a competent critic. Learn why some are superior to others and incorporate the desirable points in your next one.

Use Figures, Maps or Graphs

The purpose of a report is to convey ideas, facts, and figures, and should be done with a detail that would insure clear and effective communication to the reader. This can be done through figures, maps, diagrams, or graphs, which are occasionally an excellent means to clarify and vivify the information submitted. They are particularly essential when they illustrate a technique or process, and in many engineering reports are the heart of it. They should not be an adornment but must be justified on the basis of time savings to the reader in understanding the report. The title should be exact and self-explanatory with sufficient description to excite the interest of the reader. There is no advantage to a short title if it be at the expense of accuracy or clarity. This should be followed immediately, stating completely what information it is intended to submit. In submitting facts which may result in revolutionary changes, issue warning, if known, on how other departments, divisions, or individuals might be affected,

(Continued on Page 64)

The author is prompted in this, the sixth article of his series, to cover information that it is believed will be an asset to Tool Engineers in compiling satisfactory reports and subject analyses. Having been the recipient of severe criticism himself on numerous occasions for the writing of poor reports, he believes that many readers have had the same experience and desire to improve their ability in this respect. Haven't you often heard the boss say, "I have an analysis here, but I can't make head or tail of it"?

Tool Engineers Should Be Members of A. S. T. E.

By CONRAD O. HERSAM

CHAIRMAN, NATIONAL MEMBERSHIP COMMITTEE

THE art and science of Tool Engineering is one of the oldest in the world in spite of the fact that the designation of "Tool Engineering" is of very recent origin. Up to a few decades ago a "Tool Engineer" occupied a rather lowly place in the wheels of American industry. He was more or less the "under-dog" of a plant. He was the drone of an industrial plant because his salary was regarded as purely overhead. For this reason he used to be kicked around from one plant to another, from one city to another. He was the nomad of the engineering profession. He was not even considered as one of the engineering profession.

After the invention of the automobile or "horseless carriage" as it was called in those days, the daily routine in the industrial life of this country began to change. In the first stages of the "horseless carriage" little thought was given to mass-production and for some time interchangeability remained a designation unknown and unexplored. Engineers devoted their time to the design of new products, the construction of better and more accurate machines, the development of more and better processes.

Methods and processes to manufacture these new products received little or no attention. Production costs were disregarded entirely. But soon numerous industries began to introduce interchangeability, mass-production and production cost reduction, with the idea to produce products in larger quantities and to sell them at lower costs.

From that time on manufacturers of other products became mass-production-minded and production costs-conscious. An ever increasing demand for process engineers, production engineers, jig and fixture designers, die designers and special machine designers was the result. "Production costs reduction" became the by-word of the product manufacturer. The time soon arrived when the demand for production and process engineers was much greater than for product and development engineers. From year to year the process and production engineer gained in importance in the industrial life of this country until they finally became the key-men of existence of American industry.

From year to year the field of Tool Engineering increased, demands for greater cost reductions had to be met, more interchangeability was called for,

machine tools and tools of higher efficiency had to be developed in order to meet these demands.

The need for a source of knowledge, an institute of research, a medium of exchange of knowledge became greater and greater. With this thought in mind thirty-three Tool Engineers of the Detroit area met in February, 1932, banded themselves together and founded

The American Society of Tool Engineers

Technical meetings were inaugurated, tooling problems were discussed over the dinner table, expert speakers were procured to discuss process and mass-production problems, friendships were formed and the everlasting elevating spirit of good fellowship and co-operation was manifested throughout. Articles on advanced Tool Engineering were published in the A.S.T.E. JOURNAL and later THE TOOL ENGINEER.

The growth of the Society has been rapid. Soon Chapters were chartered in other cities. The membership at the end of 1932 was 465. On March 1, 1939, our membership was nearly 3000 and today our Society has a membership of nearly 4000 in 27 Chapters and 2 student chapters in the United States and Canada.

On June 28, 1939, with the chartering of Chapter No. 26 at Toronto, Canada, our Society became an international engineering body. Our members-at-Large cover practically all four corners of the world.

Soon new chapters will be chartered in Muncie, Ind., South Bend, Ind., Erie, Pa., Birmingham, Ala., and San Francisco, Cal.

Over a period of seven years nearly 4000 Tool Engineers became members of our Society.

Why?

1. Our Society has something of value to the Tool Engineer. He gets an opportunity to exchange ideas about his every day tooling, and production problems. Educational lectures deal with tooling; production, and cost reduction are subjects constantly discussed. From time to time the Society issues a series of data and dimension sheets which are of great assistance to the Tool Engineer, in fitting fixtures to machines. The official organ of the Society, THE TOOL ENGINEER, which is issued monthly publishes interesting articles and papers on Tool Engineering and endeavors to get the Tool Engineers from the various cities in closer

contact through the "Chapter Doings Column." The bright sayings of "Handy Andy" are always appreciated by all members and non-members who read THE TOOL ENGINEER.

2. The educational features of our Society appeal to the manufacturer who employs the Tool Engineer. They support our Society in its various activities. In 1938 and again this year our Society held Machine and Tool Progress Exhibitions in Detroit. Industry throughout the entire country supported these exhibitions wonderfully.

The manufacturer realizes that the knowledge which his Tool Engineers obtain through our Society reflects very materially upon the quality and production cost of his particular product.

3. Our continuous research work pertaining to tooling and mass production problems are of the greatest value to the educator of Tool Engineers. Strange as it may seem, there is a very decided shortage of Tool Engineers in the country. Technical schools, colleges of engineering look forward to our Society to supply them with the necessary up-to-date material so that they may continue training the younger generation for responsible positions in the field of Tool Engineering.

4. Our Society is valuable to industry in general because our research efforts will assist in cost reductions, lower sales prices, greater profits and greater markets for the various products.

5. Civilization and mankind as a whole appreciate the efforts of our Society because it brings within the financial reach of the large majority of American people products which afford ease, comfort and luxury and thus elevate the standard of living of our people.

Primarily our Society is an educational Society. Within it the Tool Engineer gets an opportunity to exchange knowledge and ideas about his every day problems in the factory, the tool room and the tool design department.

However, within our Society, the Tool Engineer also gets an opportunity to form social contacts, to get acquainted with the real honest, and uplifting spirit of good fellowship. Foundations for many good and sincere friendships have been laid within the Society.

A gratifying spirit of fun and good fellowship prevails in our social activities, especially during the summer

(Continued on page 50)

American Society of Tool Engineers

(Incorporated)
DETROIT, MICH.

PHOTO

APPLICATION FOR MEMBERSHIP

Photograph Not Necessary

TO THE MEMBERSHIP COMMITTEE:

Date

I hereby apply for membership in the American Society of Tool Engineers, Inc., in the grade of membership to which in your judgment I am entitled.

Type or Print Name

Name and address of company

Title, position or occupation..... Name of Superior Officer

Products or business of company

Address for Society mail.....

General Statement of Qualifications

Date of birth—Year Month..... Day

Place of birth—City County..... State

Of what country is applicant now a citizen? Race

Naturalized? When?..... Where?.....

Grade School Address

High School Address

Technical School Address

Outline of technical education

Names of other scientific, engineering, architectural or civic organizations of which you are a member:.....

List of References

Give five members references, seven if feasible. If an applicant does not know a sufficient number of members, he may give as references the names of non-members who are familiar with his work. Give address of non-member references.

- 1
- 2
- 3
- 4
- 5
- 6
- 7

OVER

FILL IN—TEAR OUT AND RETURN

FROM	TO	YEARS	NAME AND ADDRESS OF COMPANIES	TITLE OR POSITION	SPECIFIC DETAILS AS TO NATURE OF WORK

I hereby certify that all statements made in this application are correct, and agree that if elected, I will be governed by the Constitution and By-Laws, as long as my connection with the Society shall continue. I furthermore agree to promote the object of the Society so far as shall be within my power.

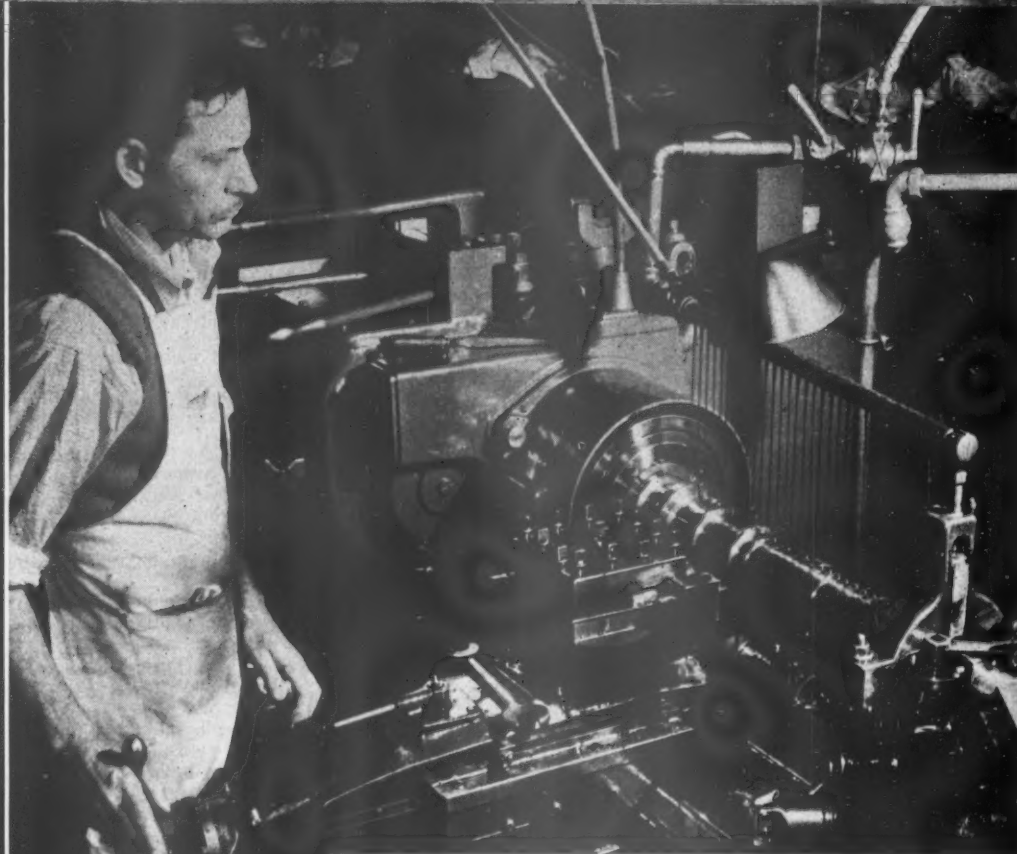
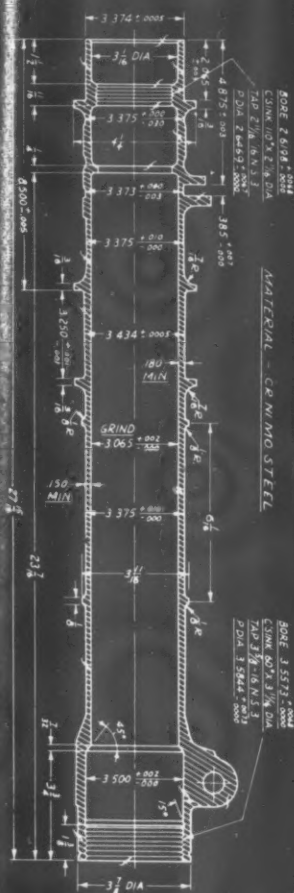
Initiation Fee Must Accompany This Application

Signed _____
National Membership Committee Chairman

Here's the Start of a Happy Landing



The new Curtiss XP40
Army Pursuit Plane



● This operator is at work on a 3-A Warner & Swasey Turret Lathe in the plant of the Curtiss-Wright Corp., Buffalo, New York, machining a cylinder for a landing gear strut in lots of 50. The material is a forging of chrome nickel moly steel. Note the close tolerances shown in the blue print.

Wherever you go in the aircraft industry, you will find Warner & Swasey Turret Lathes because Warner & Swaseys can *always* be depended upon for accuracy on any turret lathe job.

If you have a turning problem it will pay you to contact your local Warner & Swasey engineer—or write Warner & Swasey, Cleveland.

**WARNER
&
SWASEY**
Turret Lathes
Cleveland



Production Perspectives

News of Mass Manufacturing from Everywhere

IN the three weeks which have elapsed since this page went to press for the last issue, changes in the mass manufacturing world have been so tremendous that it is almost impossible to convey them here and do justice to the shifting scenes. From "depression to the biggest boom we have known" and "if we don't get another order for two years, we're all set" to the cancellation of the National Machine Tool Builders Show because "the quickened demand for all of the products of industry... is reflected in the need for better machine tools since all manufacturing equipment is built on them," are a few of the ideas we have heard expressed these past few days. A prominent auto manufacturer in the higher-price class has stated that he expects the biggest year (next year) in his history.

Despite the apparent optimism, the abundant orders for machines and tools, the marked scarcity of skilled operators and mechanics, American industry wants peace. War destroys lives, wrecks homes, causes economic chaos—depression as an inevitable aftermath. Peace is the life blood of progress—peace should be the national objective. Industry's position was stated by the National Association of Manufacturers in a press statement issued September 20th as "opposing profiteering" and pledging energetic support to a policy of "recognizing a responsibility and moral obligation to conduct our businesses so that the prices of the products we produce and sell are related equitably to production costs."

Looking over the industrial map we find the following highlights:

Industrial activity in Massachusetts took a big jump in July, reaching nearly 15 per cent above July a year ago, as shown by the state planning board index, just released.

Using the average of the years 1925-27 as 100, the composite figure for last month was 80.7 compared with 70.3 in July, 1938, a gain of 10.4 points or 14.8 per cent. All five subjects in the index advanced, some of them very substantially. **Biggest of the increases was the 43.5 per cent gain in floor area of new building contracts** awarded, an advance in the index figure from 26.9 last year to 38.6 in July.

Industrial employment, one of the most significant factors, **gained 10.1 points**, or 16 per cent. **Electric power consumption**, partly estimated because of late reports, **gained 10.9 points** or 8.5 per cent.

It is noted that while the number of people employed was 16 per cent larger than a year ago, the **total payrolls were 23 per cent larger**. Out of 22 major industries specifically listed

by the department of labor and industry, **19 showed increased payrolls in July** compared with a year ago, some of them being up by as much as 75 to 100 per cent. **New orders received by Massachusetts factories continue in good volume**. The index prepared by the Associated Industries in July stood 17 per cent over July a year ago, which gives promise of continued industrial activity.

United States neutrality will have little effect on the business of either the Millers Falls Company or the Greenfield Tap and Die Corporation, officials said. Philip Rogers, president of the Millers Falls Company, said he had studied the list of banned goods and had not been able to find any of the more than 1,500 varieties put out by his company which were affected by the embargo. Similar indications came from the Greenfield Tap and Die Corporation.

Present European business at both companies has been held up temporarily, but Rogers said he thought shipping would soon resume in somewhat normal fashion. "It is still far too early to tell the effects of the present war on local industry," Rogers pointed out.

While numerous industrial plants in the Springfield area already are preparing to increase their output to meet larger markets provided by the European war, as evidenced by an upswing in the demand for production machine workers experienced by employment agencies, some manufacturers said that it may be several months yet before they really begin to feel the effect of current world conditions.

Another indication that machinists were in demand came when advertisements were inserted in newspapers by the Employers Association of Western Massachusetts. Allister R. Tulloch, executive secretary for the association, said further demands for workers will doubtless be made in the near future. Mr. Tulloch said the need for machinists was not necessarily due to the war, but pointed out that American industry was bound to benefit from the European situation even through business with neutrals alone. He said South America, for example, provided a tremendous market which might be a source of many orders for Springfield industries.

The export business of the Gilbert & Parker Manufacturing Company of West Springfield this year will not be materially affected by the war, P. H. Bills, vice-president of the concern, predicts. Mr. Bills said that the company's usual export business is all done in the first six months of the year, and that the last part of the year is usually slow.

Business in this country has been good this year, and he continued, "If

the business in this country continues at its present clip, 1939 will be better than 1937 which was the banner year since the beginning of the depression."

One of the smaller manufacturing concerns of Western Massachusetts, the Wico Electric Company of West Springfield, in its report for the year ending June 30, last, shows a 70 per cent increase in sales over the previous year, and a 371 per cent increase in profits. The company manufactures magnetos and small motors. It reported net sales for the year of \$1,362,090 and a net profit of \$95,626 after all charges including federal taxes.

With 1,800 employees at the United States Armory in Springfield at present, production on the Garand semi-automatic rifle is increasing steadily, it was reported there. Employees are being added as the stepping up of production warrants with at least several hundred more due to be added before many more months have passed. The Armory is working on a schedule determined many months ago as part of the War Department's regular program and which, although dictated in general by conditions elsewhere in the world, is not attributable at present to the current war scare.

Indian Motorcycle Company, Springfield, is looking forward to a fairly good year, Loring F. Hosley, general manager, says. The company has been unusually busy during what would ordinarily be a slack period by filling a \$110,000 order for the Federal government. The company is now tooling up in preparation for the new models which will be coming off the assembly line soon. Peak production is ordinarily reached in March and April. Recently the company received a release by the Union Trust Company on a \$200,000 personal mortgage. Five years ago the company borrowed \$200,000 from the Federal Reserve Bank. The last payment was made two months ahead of schedule, Mr. Hosley said.

L. S. Starrett Company, Athol, reports for the fiscal year ended June 30, 1939, net profit of \$330,244 after charges, equal to \$2.13 a share on the common. This compares with net of \$465,283 or \$3.05 a common share in the preceding year.

Improvement in business by the Worthington Pump and Machinery Corporation, Holyoke, is reported by K. Herbert Brautigan, manager. Employment has increased in the past month. Aided by improved domestic sales and a sharp upturn in its foreign business, Worthington turned the corner with the start of the second quarter this year and began to earn money again, a trend which is being maintained in the third quarter, Mr. Brautigan said.

(Continued on Page 68)



NOW, MORE THAN EVER, you need the efficiency and convenience of STARRETT Precision Shop Equipment Tools, Dial Indicators and Hacksaws. See the complete line described and illustrated in Starrett Catalog No. 26-T or call in your regular tool distributor.

THE L. S. STARRETT CO., ATHOL, MASS., U. S. A.

*World's Greatest Toolmakers—Manufacturers of Hacksaws Unexcelled—Steel Tapes, Standard for Accuracy
Dial Indicators for Every Requirement*



Chapter Doings

By George J. Keller

FROM the looks of the returns for this column, the boys must still have vacation on their minds. As for me, my vacation has come and gone. It seemed much too short. For most of us it was rather disappointing that the Machine Tool Show was postponed. This show usually makes a swell place to renew old acquaintanceships as well as seeing the latest developments in machine tools. We are, however, having the Semi-Annual meeting and your editor hopes to see many of you there.

Toledo opened the fall season on September 5th at the Toledo Yacht Club. R. M. Johnson, of the Norton Co. delivered a very effective talk on "Factors Effecting Grinding Wheel Selection." This talk was illustrated with two very interesting movies.

Schenectady Chapter opened the season on September 11th with an illustrated lecture by V. H. Ericson of the Norton Company on "Refined Surface Finishes as applied to Regrinding of Metal Cutting Tools." A large group of apprentices from the General Electric Company plant attended as guests. That's a smart move and your editor feels that possibly all the chapters should have open house at all meetings for apprentices. The more information we pass out to these youngsters the better our mechanics of the future will be.

Twin Cities Chapter started off their autumn program with a dinner meeting at Dunwoody Institute. Dr. C. A. Prosser, Director of the Institute, praised the part the Tool Engineer and the tool makers have played in our industrial developments. He also gave warning about the approaching crisis and the importance of Tool Engineers and tool makers who will be put to a test never before equaled in producing products with both brains and hands. The "never-miss-a-meeting" members, Bill Erskine, George Seaburg, Charlie Adams and Glenn Roberts were on hand. Chris Rockman made his usual annual appearance. After he graduates from evening school they hope he'll come more regularly. Chairman Wise who lost his hair in the Sioux Uprising, held a snappy discussion on plans for the coming season.

Rochester Chapter met in the Spanish room of the Powers Hotel on September 13th. University of Rochester is not open as yet and the boys are looking forward to the future meetings at the River Campus where the chairs are not so hard. V. H. Ericson of the Norton Company delivered an illustrated address on the "Refined Surface Finish as applied to Regrinding Metal Cutting Tools." Paul Yingling of the Camera Works did a lot of spouting about his 4 pound Bass. For the benefit of Newt,



A.S.T.E.s, here there and everywhere. The above postal card addressed to Mr. Rylander, Detroit member, was received through the National Office from a past president—Bert Carpenter now in Sweden. Bert and two other past presidents, Walter Wagner and Bob Lippard, were all in Paris recently. Says Andy R. "Thanks for your postal, Bert, but figured that a message from a former—and popular—Prex should be passed on to the gang. I'll write you longhand, which will give you a winter's diversion. Ask Otto Winter—he knows."

Your editor wishes to advise that he is under the impression that a 4 pounder isn't a keeper.

Rockford Chapter had two business meetings in August. At the August 15th meeting plans were definitely made for the balance of the year and these plans were further discussed at the September 29th meeting.

Even though the thermometer registered 100 degrees on September 14th Rockford chapter assembled at the Faust Hotel about 425 men, eager to hear the story of marvelous inventions in the realm of Science by Dr. Phillip Thomas of the Westinghouse Electric and Manufacturing Company in the main address of the evening—or the story of the miraculous growth of the A.S.T.E. by Mr. James R. Weaver, National President of the A.S.T.E. in his dinner talk—or both. Or perhaps they came to see and study the twenty-two fine exhibits and just be together to talk of their various problems and get each other's point of view on the general trend of industry.

Fred Kempmeier, Co-Chairman, had charge of the meeting, which, besides being the second anniversary meeting

of Chapter 12 was a Testimonial Meeting in honor of Mr. E. W. Dickett, past Chairman of the Chapter and now Second National Vice President. A rising vote of thanks was tendered by Dickett for his past services.

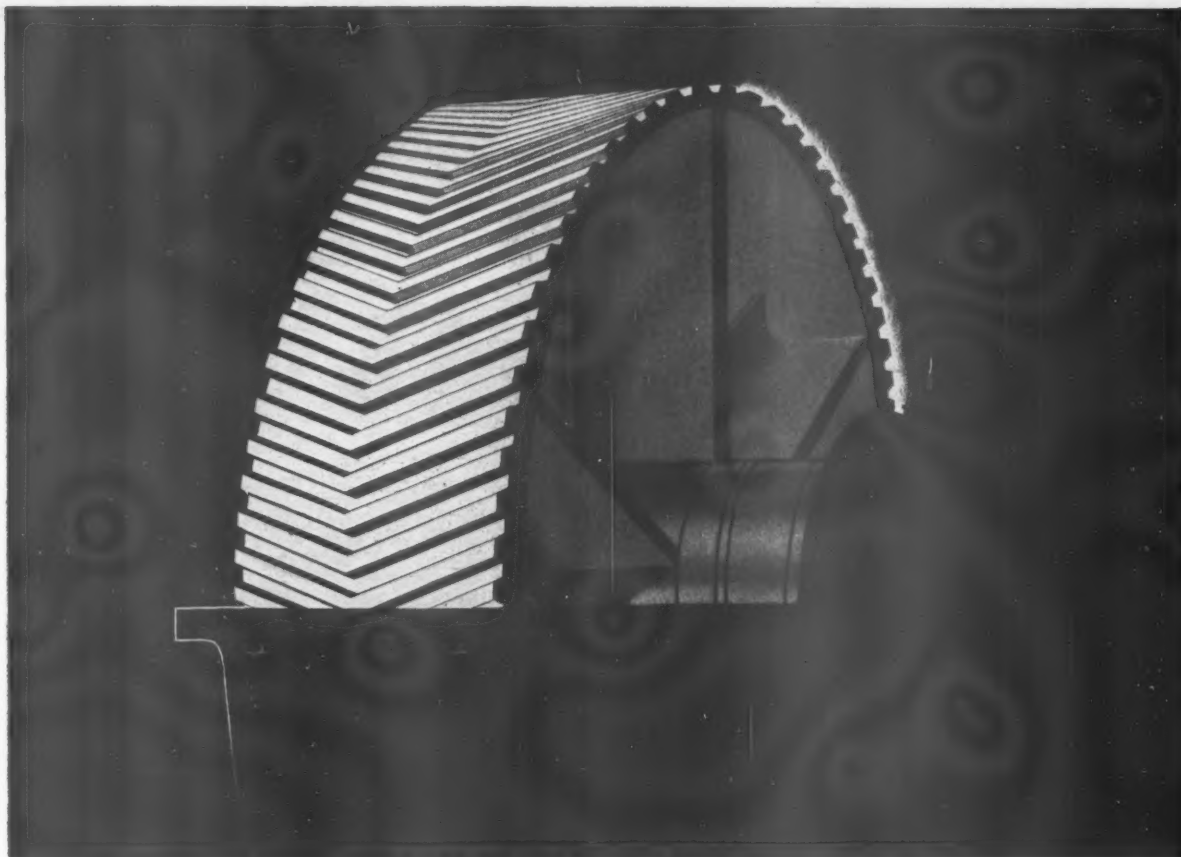
At 9 P.M. Dr. Phillip Thomas gave a most interesting talk on the inside workings of the Westinghouse Research Laboratories. He told of many wonderful discoveries in the field of science and being surrounded by suitable apparatus he actually demonstrated what he said. The registrars at the door reported that about 425 attended the meeting and the dinner attendance was 200. The meeting started at 5:00 o'clock and lasted until nearly 12:00 o'clock.

Buffalo opened the season at the University Club on September 14th with a dinner meeting at which V. H. Ericson of the Norton Company was the guest speaker. The picnic to be held on September 23rd was also discussed. There will be 15 different contests at this outing with about 30 or 35 prizes to be awarded. The outstanding contest is the unique Citrullus Vularis guessing contest. That will hold you tool engineers for awhile. Ot Winter is tearing his hair and getting books from the library trying to find a clue as to what it might mean.

New York-New Jersey opened the season September 13th at the Robert Treat Hotel, Newark. They have 261 members and have enlisted the aid of "High Pressure" Hersam National Membership Chairman to help them boost their membership. Russ Kindt has planned another successful season for the speaker's Class. Bill Brown announced that Stanley Jarmick had won a two year scholarship in tool engineering. He will go to Evening Tech, Paterson. Tom Orchard disclosed further plans for the golf tournament on September 16th. "Ticket Scalper" Scharfenberger gave the boys the works and asked for more support. Wally Gray introduced Ralph E. Flanders, who spoke on the subject of "The Tool Engineer's Place in Industry." You needn't have worried, Wally, your editor has known Ralph Flanders for about 15 years. He has never failed, to my knowledge, in keeping an appointment. That's why I'm not surprised that he was at your meeting even though he had arrived from Europe only the Friday before.

Detroit Chapter opened its fall and winter meetings with a sizzler, the hottest September 14th on record. The lads pulled off their coats and listened attentively to "Panorama of Alloys in Steel" by W. P. Woodside, Vice-President of Climax Molybdenum Co. His

(Continued on Page 36)



A CASE OF STANDARDIZATION

The fewer the different steels with which a foundry works, the simpler its operation, the better the techniques it develops — and the lower its costs. Standardization brings competitive advantages to the foundry, service benefits to its customers.

Molybdenum steels frequently make such standardization possible. For example, a large foundry uses cast Manganese-Molybdenum steel for an entire line of herringbone, single helical, and spur reducer gears up to 60 inches O.D. with hardness specifications ranging from 180 to 270 B.H.N. and correspond-

ing variation in required strengths. With this versatile steel, the specified hardnesses and physical properties are obtained simply by varying the heat treatment.

In addition, cast Manganese-Molybdenum, being free cutting at high hardness, permits machining of the uniformly sharp and even teeth required.

Molybdenum steels, both cast and wrought, are keeping down costs and bettering performance in many such cases. Our book, "Molybdenum in Steel," giving practical data, will be sent free on request to production executives and engineers.

Visit our booth, L-334, at the National Metal Exposition, October 23-27, in Chicago.

PRODUCERS OF MOLYBDENUM BRIQUETTES, FERRO-MOLYBDENUM, AND CALCIUM MOLYBDATE

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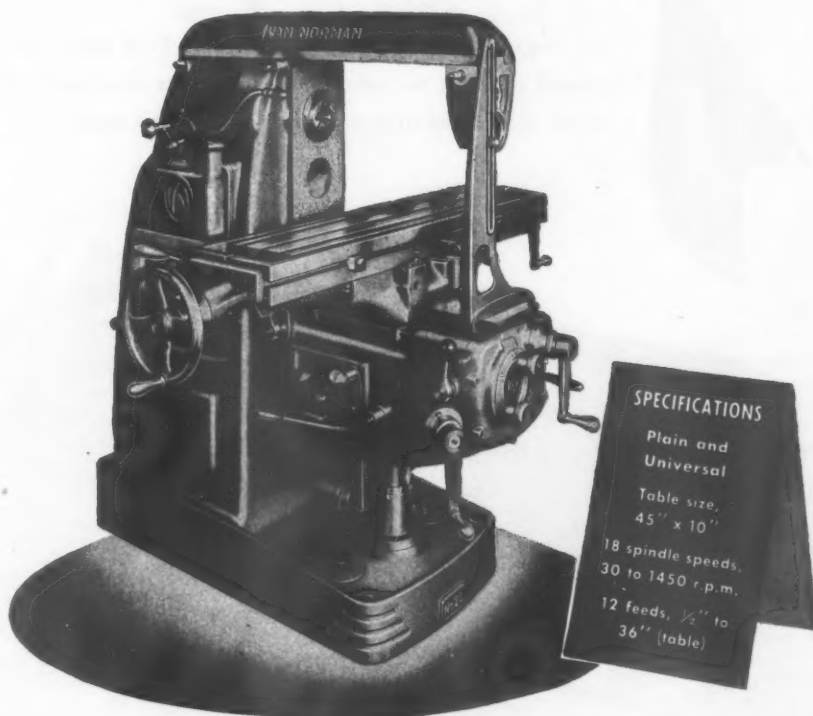


NEW No. 26 and No. 36 Ram Type Universal Milling Machines...bigger...heavier...greater rigidity...front and rear controls...6-way rapid traverse...greater selection and range of feeds and speeds...vertical, horizontal and angular milling without attachments, with fewer set-ups.

Write for Bulletins.

VAN NORMAN

MACHINE TOOL CO., SPRINGFIELD, MASS.



NEW No. 2-L . . . a light model milling machine
 . . . plain or universal . . . front and rear controls . . . 6-way
 rapid traverse . . . wide range of speeds controlled by single
 lever selector . . . sensitive, accurate, compact . . . precision
 built...modern design, exceptional rigidity and dependability.

Write for Bulletin.

VAN NORMAN

MACHINE TOOL CO., SPRINGFIELD, MASS.

OUR *Regrets*...

We regret that the National Machine Tool Show has been postponed and that we cannot show you our two latest developments which were to be in operation in our exhibit space.



★ NEW GORTON MASTERMIL!

Most important feature of this exhibit would have been the first showing of our new MASTERMIL, designed for duplicating multiple cavities, and die sinking of single cavities on work as large as 30 inches square. This machine has increased adaptability, capacity, and convenience in working plastic molds, die castings and forging dies, large metal patterns, and tool work.

★ NEW SUPER-SPEED UNIVERSAL MILLER!

Another recent development is the new Gorton 8½-D Universal Miller which retains the desirable features of our previous model with several important improvements.

GEORGE
GORTON
MACHINE CO.

NUMBERS in photograph identify Gorton machines. 1, MASTERMIL No. 15-B; 2, 3, 4, and 5 are Gorton Super-Speed vertical millers and duplicators, including the new Universal Head model; 6, cutter grinder; 7, 8, and 9 are two and three dimensional pantographs. WRITE FOR COMPLETE DETAILS.

1111 13th Street

Racine, Wisconsin

MEMO

To: THE BOSS AND THE PRODUCTION MEN
From: THE SALESMEN WHO HAVE TO SELL
YOUR PRODUCTS
Subject: AMPCO METAL

Wherever we go, we hear about Ampco Metal. Please get the complete facts on why Ampco Metal offers such remarkable values in wear-resistant and shockproof qualities and why Ampco Metal is the usual choice of machine tool builders for extreme service parts—gears, bushings, bearings, etc.—where long-life is demanded.

Maybe if you put more Ampco Metal in the vital parts of our machines, we'd sell more of them—easier.

AMPCO METAL—rough and machined sand and centrifugal castings, forgings, rolled and extruded stock.

AMPCOLOY—perfected heat treatable aluminum bronzes.

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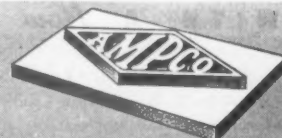
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A little fellow



SAVE WITH A *New* CINCINNATI

Machine—CINCINNATI 1-12 Plain Automatic Miller

Part—Needle Bar Driving Crank

Material—Screw stock steel

Operation—Form mill using climb-cut method

Depth of Cut—13/16" deep and 11/16" wide

Limits— $\pm .005"$

Table Feed—3 1/4"

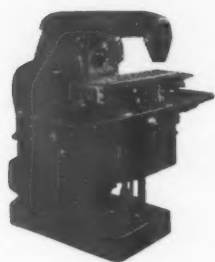
Cutter R.P.M.—149

Time Per Piece—65 seconds (load and mill)



DIGS

IN...



CINCINNATI 1-12 and 1-18 Plain Automatics, with 5 H.P. multiple "V" belt drive, can really bite off plenty of metal rapidly when called upon.

Take the case of this sewing machine manufacturer who form mills needle bar driving cranks made of screw stock steel using the climb-cut method of milling. On a part 2-5/16" diameter, the 1-12 takes a cut 13/16" deep and 11/16" wide. The cut is taken in 52 seconds—about 65% faster than when formerly handled on another machine.

The 1-12 or 1-18 takes jobs like this in stride in shops all over the country. Production men have long recognized these machines as ideal for

fast, accurate production of small parts which go into business machines, sewing machines, small air-conditioning units, hand tools, etc.

On these machines you can handle either climb-cut or conventional milling. You get automatic table cycles . . . screw feed to the table . . . 300" per minute rapid traverse . . . automatic spindle stop . . . automatic backlash eliminator . . . rigid pick-off gears . . . close accuracy of trip . . . and many other profit-making features.

Here's a little machine for really fast production that has "teeth in its bite." Find out more about it by writing us today. No obligation.



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Manufacturers of

Tool Room and Manufacturing Milling Machines

Surface Broaching Machines

Centertype Grinding Machines

Cutter Sharpening Machines

Centerless Grinding Machines

Centerless Lapping Machines

CHAPTER DOINGS

(Continued from Page 28)

lecture was illustrated by slides and sound pictures. Musical entertainment which rivaled the heat of the evening, accompanied the steak dinner. Former National President, Walter Wagner, spoke of his recent stay in Europe. He spent much time in the factories of England and France. Charlie Staples and L. C. Gorham were present.

Sixty-five members and guests of Elmira Chapter, gathered at Hotel Langwell Friday, September 15th, for the first dinner meeting of the season. The technical speaker was V. H. Ericson, research engineer of Norton Company,

Worcester, Mass. His subject, "Refined Surface Finishes as Applied to Regrinding of Metal Cutting Tools," was of direct interest to those present. The talk was illustrated by slides and samples of cutting tools. Two motion pictures in technicolor, "Norton Abrasives" and "Norton Abrasives at Work," were well received. Five applications for membership were received. Joe Ahearn of The Universal Instruments and Metals Co. brought a nice delegation from the Binghamton district.

Baltimore Chapter started the fall season with an attendance of 125 at their first meeting in Sears Roebuck Auditorium. Mr. E. V. Crane of E. W. Bliss Company delivered a very interesting

talk on "The Working of Plastic Metals in Presses and Dies." Everyone was happy to see new faces from several plants in this area. The varied programs planned for this year should not be missed by any tool engineer in Baltimore. The technical knowledge gained and the good fellowship enjoyed makes it worthwhile.

Cleveland Chapter opened its Fall Season with 75 members for the first dinner and meeting. No technical session was planned because it was necessary to make plans for the coming Semi-Annual Meeting to be held here in October.

The boys were given a preview of the entertainment which will be had at this meeting following the dinner and also were entertained by the Chapter's official quartet. This quartet consists of Rudy Harrold, basso; Tom Hudon, baritone; Bill Reiff, Jr., alto.

Clete Briner pulled another one of those "aces" he is noted for by bringing to the meeting Mr. Bruce Boutall, head of the Criminal Records Dept. His business is to know and record all criminal activities in this town of ours. The boys were given a fine talk on criminal methods.

JIM WEAVER TO ADDRESS MACHINERY DEALERS

A. G. Bryant, of Bryant Machinery & Engineering Co., Chicago, Illinois, President of the Associated Machine Tool Dealers of America, has announced that the Annual Convention of the Association will be held on Thursday, October 5th, 1939 at the Hotel Cleveland, Cleveland, Ohio.

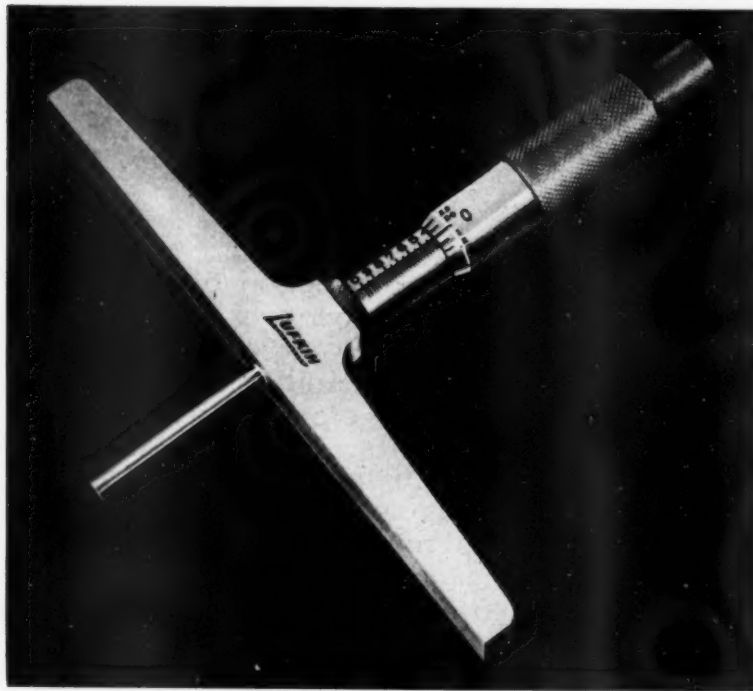
The decision to meet on October 5th was reached after consultation with J. R. Weaver, President of the American Society of Tool Engineers, as that organization will convene on Friday, October 6th for a two day session.

Following the Executive Committee Meeting, which will take the form of a breakfast session at 8:00 o'clock, Thursday morning, the Executive business session of the Associated Machine Tool Dealers of America will convene at 9:45 A.M. and will include the reports of the Standing and Special Committees.

This will be followed by talks by Members of the Association on the possible effect of Government buying on the Machine Tool Industry, especially dealers. New Officers and Directors will be elected during the Convention to serve for the ensuing year.

In the evening, there will be an informal dinner with addresses by Mr. Weaver, President of the American Society of Tool Engineers and by President Bryant. The title of Mr. Weaver's talk will be "Machine Tool Problems."

On Friday and Saturday, October 6th and 7th, Members of the Dealers Association will be entitled to attend sessions of the American Society of Tool Engineers, and participate in the Plant Visitations which they have arranged.



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... And that's what Carpenter's Matched Set Method of Tool Steel Selection gives you. With it you can accurately forecast the behavior of any particular tool both in hardening and service. You can be sure in advance that your tools will be given the exact degree of wear resistance, toughness, hardening accuracy, or red-hardness, they will need. Such tools insure maximum production from every machine in your production line. They last longer and turn out better work. Why not follow the lead of other successful tool engineers and cash in on the Matched Set Method? Hundreds of plants to their own satisfaction have proved that it can quickly reduce tooling costs, increase production per tool, and insure greater freedom from tool troubles.

You might expect it would take weeks to acquire the principles of a system as effective as this. Actually, the Matched Set Method has been so completely worked out, and is so simple to understand that you can quickly master it from this 60-page Matched Tool Steel Manual. In addition, the Matched Tool Steel Manual gives much valuable information on heat treating, furnace atmosphere, drawing temperatures, etc. Send today for your free copy. There is no obligation.

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Have you investigated the possibility of stepping-up this ratio in your shop with Eclipse engineered and manufactured tools?

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*and how much
would it cost?*

Are you prepared for an unusual demand your plant may be called upon to meet? If the time comes when your production must be multiplied to an unprecedented extent and with all possible speed, what will be your answer?

Under such conditions, the normal increase you can obtain from extra man-power and extra hours of work may be inadequate. The real solution then lies in increasing productive facilities, making machines do more work in a given time, producing in one hour that which formerly required two—and doing this without sacrificing essential quality.

The plants in which management is today laying the groundwork for the procedure and equipment necessary to provide for tomorrow's production requirements, are the plants that will meet this demand quickly and efficiently. Costly confusion and delay may be the penalty of procrastination; orderly production and sound profits the reward of preparedness.

For plants whose production involves machining operations, Carboloy cemented carbide is of exceptional importance in such a program. The ability of this material to increase production through higher cutting speeds (or feeds), and less downtime for tool changes, is an accepted fact established over a period of 10 years. As such, Carboloy tools are an invaluable factor not only in stepping up the productive capacity of existing equipment but also in obtaining maximum performance from new machine tools.

Past experience has shown that in each plant a period of adjustment is usually necessary in order to obtain the full benefits of Carboloy tool use. This is particularly true in cutting of steel with cemented carbides.

Our organization today has the manpower and time to assist you in establishing the best practice for cemented carbide use in your plant. Call upon us today to help your plant prepare to meet tomorrow's demand . . . with Carboloy tools.

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CARBOLOY CEMENTED CARBIDE TOOLS

*Handy
Andy
Says* —



The start, here, should really be an epilogue, because the Column was written and turned in for print while there was yet a fugitive hope for peace. Then, the postponement of the Cleveland Show obsoleted about everything written, so we just put away the original and started all over again. Now, at second writing, the dogs of war are

unleashed, the whole a prelude to horrors which, we pray, may spare America. Yet, ours is a land of many racial stocks and, the A.S.T.E. typically American in cross section, it is inevitable that there will be partisanship and high feeling despite our neutrality. Under the circumstances, it would be a moral wrong for me to refrain from comment on an issue so momentous, especially comment designed to foster the friendliness which has been a keynote of the Society.

▼ ▼ ▼

Two wrongs do not make a right, and the European conflict is a result of many wrongs; diplomats sowed the whirlwind at Versailles and humanity now

reaps the tempest. But eventually there will come peace and reconstruction; the scars of war will heal and the peoples involved will resume commercial and social relations. It is entirely right, then, that in a crisis we rise above our prejudices and unite in our common Americanism, that we forge our own bonds the stronger. The German people did not want war, of that I am sure, nor did the Poles, and we are witness that the French and English refrained from overt action as long as they could honorably do so, their guarantees considered. War has been precipitated by ambitious minorities, themselves no doubt puppets of forces with which humanity cannot as yet cope, but which it will eventually conquer. Take this, then, in the spirit written, a message designed to perpetuate the good fellowship in which the A.S.T.E. was conceived. With mutual understanding of the problems of our fellows, and a deep and abiding sympathy for the unfortunates drawn into the maelstrom of war, we remain a potential instrument in shaping the world "nearer to our hearts' desire."

▼ ▼ ▼

A while back, one of the boys ribbed me about my grammar, suggested that "no good writer ever starts a sentence with 'and.'" Well, I admit my shortcomings; being bilingual—with a dash of poly—the king's English may suffer at times. However, I am usually more concerned with putting an idea across in the fewest possible words than with syntax and stylism; there is a view toward easy reading, hence, resort to colloquialism and the conversational tone. And personally, I find that the first spontaneous, flashing thought strikes a responsive spark in the reader's minds, a spontaneity often lost in rewriting.

However, the ribbing (good natured enough, by the way) made me a bit self conscious, so I went at my reading in a more critical light, finally came to the conclusion that I have plenty of company even among good writers. Take the Bible, for example, still one of the best sellers despite the alleged crisis in Christendom. It is an inspiration to artists, novelists and playwrights; it is the fount of countless sermons, portrays about every situation in which humans may find themselves and contains some of the most sublimely beautiful passages ever penned. And, in some books, about every other sentence starts with "and." And many of our most distinguished editors, as well as noted columnists and renowned scientific writers, do not hesitate to start with "and." And so on. Oh sure, I'm putting it on thick now; got to have some fun, you know. But if you want precision, say so (we aim to please), only I'm afraid you wouldn't like it. Ultra-precision is best reserved for our tool problems.

▼ ▼ ▼

Some of our parlor economists suggest that the unemployment problem would be solved if women were barred (Continued on Page 42)

DETREX means . . .



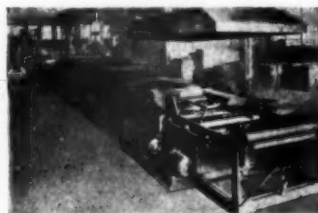
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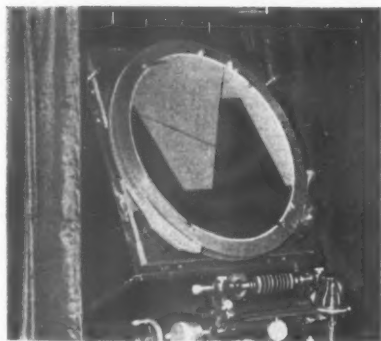
JONES & LAMSON COMPARATORS ARE THE BEST INVESTMENT FOR ALL PROJECTION INSPECTION



J&L Bench Comparator Inspecting
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Tool on a J&L Pedestal Comparator



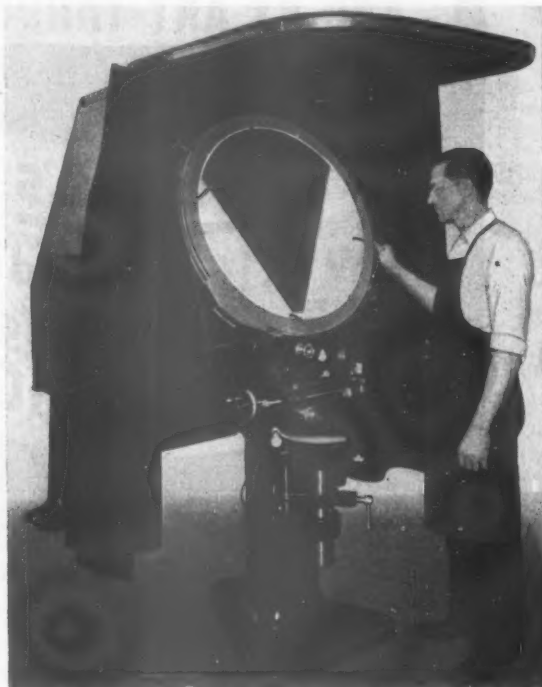
J&L Hood Comparator with 22"
Screen Inspecting Worm Gear

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1.) **EXPERIENCE:** During the past 20 years, Jones & Lamson engineers have solved thousands of difficult inspection problems and made substantial savings for owners of J&L inspection equipment. As a result of this experience Jones & Lamson is in a unique position to provide you with rapid, simplified, inexpensive inspection set-ups for your products.

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Inspecting Former on J&L Hood Comparator with 30" Screen

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Manufacturers of: Ram and Saddle Type Universal Turret Lathes—Fay Automatic Lathes—Automatic Double-End Milling and Centering Machines—Automatic Thread Grinding Machines—Comparators—Tangent and Radial, Stationary and Revolving Dies and Die Chasers.

HANDY ANDY SAYS

(Continued from Page 40)

from gainful employment—especially in the industrial fields—and, presumably, relegated to the kitchen. (They've got to be somewhere, you know.) Well, maybe, but let us consider the case on its merits, not on prejudice. Looking back through history, we find a galaxy of women who have made notable contributions to civilization, in the arts, poetry and prose, in the sciences and even in business and industry. Taking a few at random, there is Sappho, Rosa Bonheur, Ellen Key, Dr. Selma Lagerlof, Harriet Beecher Stowe, Martha Ostenso and, luminously prominent, Mme. Curie. Couldn't we exempt such as

these from the pots and pans? And Florence Nightingale? And our favorites of stage and screen?—or should we go back to Shakespearean times and tog men out in petticoats? Then, too, there is the very efficient secretary without whom we would be quite lost. And you know, some secretaries make wonderful wives; in marrying, become all women to one man. We'll exempt her too, eh?

▼ ▼ ▼

Women have been in industry, especially the textile trades, since the advent of the machine in the industrial scheme, were at work during boom times when labor was so scarce that even immigration could not fill the demand. They

made their greatest inroad during the world war, when manufacture of food, clothing, arms and ammunition had to keep pace with the demands of Mars. The boys "over there" played the stellar role, along with a host of the fair sex that nursed and drove ambulances, but we can also give a hand to the women who did their bit behind the scenes. In Germany, before Hitler went Berserk—and now, doubtless—women worked with the men, and whatever our prejudices may be against the Nazi regime, the fact remains that there was not only employment for all who would work (they had to, anyway) but an actual shortage of skilled labor. And that holds true for a great part of Europe which, incidentally, is not as backward as some of our jingoists would have us believe. Sweden, still rated as an advanced nation, has very little unemployment, yet, women work there in any vocation they fit into, which seems to be most of them. They take the stand that: "... in a free society, that professes equality of the sexes, equal privileges must be extended to all. Anything else is class discrimination." I can't elaborate on that thought.

▼ ▼ ▼

No, gentlemen—uh, excuse me, Ladies and gentlemen!—we must effect other solutions of our economic problems, since barriers against women would be no solution at all, would simply aggravate existing dilemmas. (Wonder if I shouldn't write a book on that topic. Any advance orders?) One of my friends writes me, in effect, that: "When millionaires have to pay a banker to keep their money instead of the banker paying interest, there is something rotten in Denmark." Why confine it to millionaires? To me, the bank is only a deposit box on which I have to pay rental. On a checking account, for instance, they get you coming and going; you pay for deposit and check alike. Nuts! To me, the solution lies in restoring confidence, so that industry may forge ahead to unprecedented levels. We are geared for it, keyed for it; now, for gosh sake ease off on the brakes. Let's go!

▼ ▼ ▼

The postponement of the Show was something of a shock to me; I was keenly disappointed. For, like the Tool Engineers' Shows in Detroit, industrial exhibitions epitomize the progressive spirit of America. What man can conceive, man can manufacture, and what is manufactured will be sold provided the quality is there and the price is right. We are not suffering from overproduction (the trite excuse for the late depression), but from underconsumption; everywhere in the land people scan the ads for bargains which, in the final analysis, means getting a dollar's worth of value for a dollar expended. Why say!—the Sears Roebuck catalogue alone is so powerful a strand in the web of the nation's commerce that a national magazine ran a feature article about it. As long as people read ads there is demand, and the wise man-

(Continued on Page 74)

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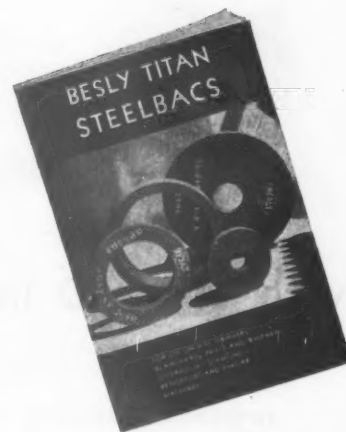
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CHICAGO, ILLINOIS

UNEMPLOYMENT

(Continued from Page 16)

made possible during those years which took care of the yearly increase of available workers.

But look at what happened after 1930. Each year shows a negative value in net capital formation. Since 1930 we have consumed more capital than we have created. We have started to eat the goose that laid the golden eggs. In six years, 1930 to 1935, we have consumed or depleted our capital structure by 34 billion dollars as shown by the chart. Add to this the average of 3 billion dollars increase of former years which we have also lost (3 billion

dollars per year since 1929, nine years—27 billion dollars), and it is seen that business savings available for employment making enterprises are about 61 billion dollars less than they would have been had the normal rate of business saving continued: 61 billion dollars divided by \$6,500.00 per jobs means 9,384,000 workers not working. There is our unemployment problem and our standard of living cannot improve as long as we continue to consume or decrease our capital structure through which all improvement must come.

Courses of Decrease in Capital Structure

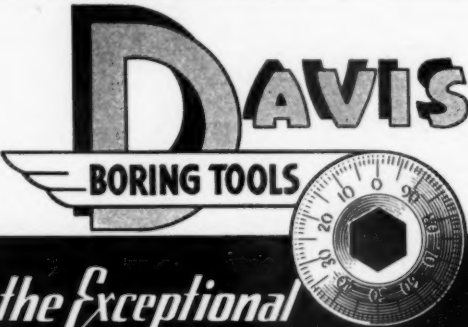
October 1929 found us suffering from

a National Colic because of our inability to digest the prosperity of the late twenties. Did we take a dose of salts, go on a diet and go back to work? We did not. We continued to mince away at the rich foods of prosperity waiting for that corner around which prosperity did not come. Then when it did not come we started out to find some one who could be blamed for its nonarrival.

Business was handy and had little defense so we started to blame business for our ills. Then as punishment we started to tax and regulate business. We demanded a higher standard of living and security for all and asked business to give it to us. When they didn't we started to take it from them and the continually increasing burden forced reduction of business volume thus making prosperity less possible. Unemployment increased and relief demands increased with it so we added to the burden of business. The entire process being one of diminishing returns, comparable to the two fighting snakes. Each grabbed the other by the tail and started to swallow. As the process continued each eventually swallowed the other and there was nothing left. Did you know that there are 206 different taxes in an automobile not counting the consumers sales tax? And this is not all by far because 15,000 parts and many more pieces in a car make impossible the computing of the cumulative tax totals accruing from each item. (Report of National Tax Commission, Inc., Chicago, Illinois.) (It sounds like the story of, "We will see who is boss around here.")

The picture now shows our "banks bursting with unusable savings accounts," government bonds at low and lower interest—the safest investment, government debt built up beyond the conception of man; 40 billions of dollars and it must all be paid back with no way of paying except for government to continue to take larger and larger slices of National Income. The worker now pays nearly 25 cents out of every dollar he earns, in taxes, hidden and open. Unless the trend is checked we may have the questionable pleasure of working so that we may pay tax with a paltry crust left over for a miserable existence. A survey of 150 corporations for 1937 shows that taxes totaled \$291.00 per share holder, \$574.00 per employee (Fred H. Clausen before annual business meeting of the American Foundrymen's Association, Cincinnati, Ohio, May 17, 1939). What is your attitude towards investing your hard earned dollars in business today. Well, give the other fellow credit for similar thoughts and you have the answer to why capital structure is disappearing each year. From the U.S. Department of Commerce Statistics we find that there were 415,205 corporations in the United States during a recent statistical year. Of this total, 54% or 227,545 corporations possessed assets of less than \$50,000.00. During the same year

(Continued on Page 46)

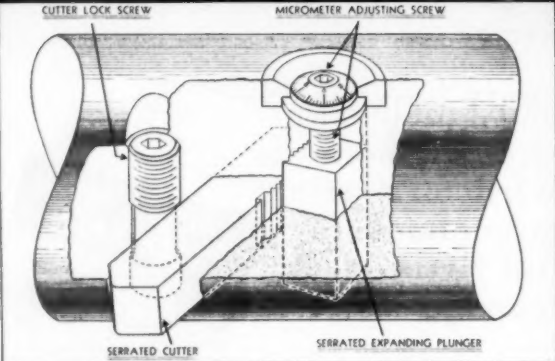


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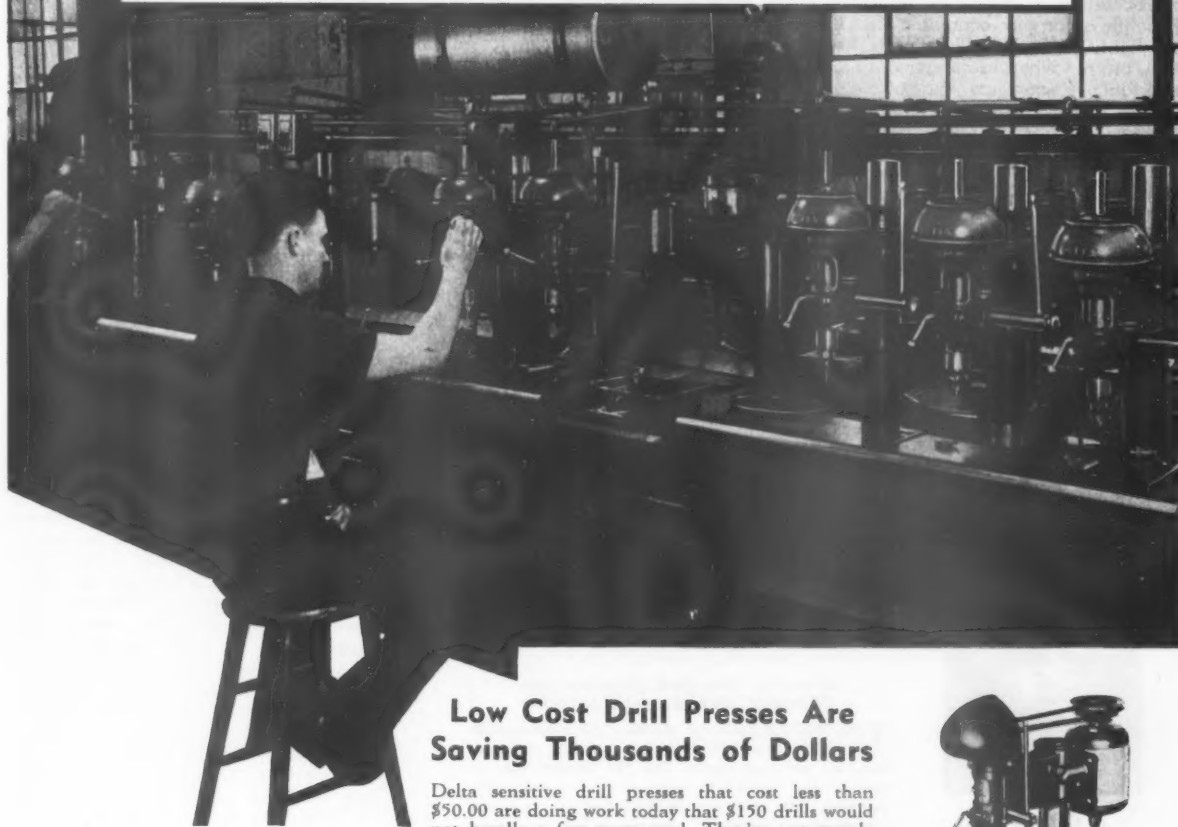
MICROMETER ADJUSTMENT: After locking in position, permits as fine as .0002" adjustment on diameter.

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Delta sensitive drill presses that cost less than \$50.00 are doing work today that \$150 drills would not handle a few years ago! They're not merely new tools—but a NEW TYPE of tools. Thousands of these new Delta Drill Presses are saving hundreds of thousands of dollars for alert manufacturers all over the world.

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Mail coupon for latest Delta Drill Press Book. It contains specifications and prices of complete line of Delta Drill Presses plus details on individual parts from which you can make your own low-cost assemblies.



Here are a few reasons why: Their first cost is less—from 50% to 75% lower than old type machines. Their maintenance cost is less—they require less power, less attention because of their sealed-for-life ball bearings and V-belt drives. They are flexible and in most cases portable. They can be moved around to fill in "waiting time" and meet changes in the production line. They can be adapted economically for special set-ups for special jobs.

They do precision work and have made remarkable production records—giving years of continuous satisfactory service!



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No. 1289—Floor-type Slow Speed 14" Drill Press with 1 1/2" Chuck and Standard Tilting Table (without motor).

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660 E. VIENNA AVENUE
MILWAUKEE, WISCONSIN

UNEMPLOYMENT

(Continued from Page 44)

above cited, 312,882 corporations, over 75% reported no net income on their corporate tax returns for the year.

If you can surmount such obstacles, you are good, and if you can't you quietly liquidate and go out of business which is what lots of them have done.

Government has expressed the necessity for raising the National Income from 65 billion to 85 billion dollars as the solution for our economic ills. Industry only, can accomplish the desired result, but not when in danger of being taxed out of existence and of being clubbed out of existence by labor. Why

can't labor leaders see that labor can be paid only in proportion to what they produce? That to raise wages you must give the worker better and more efficient tools to work with? That you can't improve the lot of the worker by driving his employer out of existence? Have you noticed that there are no new industrial giants like the Fords, Chryslers and Westinghouses springing up on the horizon? Present conditions just won't let them spring up. They built their great industries by indefatigable work, and inconceivable risk, plowing under profits to enrich the soil for greater industrial crops. Today the profits are not there to plow under. They are like the farmer who

fits his ground but has no seed to plant. He harvests no crop but he still has his land. They still have their plants.

It is conceded and understood that the necessary change in trend to start us back to prosperity will be a slow movement. The general public must understand the facts for politics must cater to public opinion. In the meantime, our vast number of unemployed must receive consideration, but not to the extent of destroying our civilization so that the unemployed may live a full life without effort. They must make the sacrifice too if we are to build safely.

I don't expect or believe that we can change human nature over night or that we can make a Utopia of our country, but I do know that it is necessary to check the spread of grass-hoppers, corn borers and Japanese beetles else they will destroy us. Without meaning any disrespect I state that the leaches upon society must be controlled before they suck the life blood of the Nation. They are prolific. The welfare worker protests to the charity father about the regularity of the increase in the family, protesting that more care should be used. His reply is that God put it there to use and he was going to use it. Perhaps he is right, but I protest against having to feed and raise his offspring.

Let us recognize facts. Jobs depend upon capital structure. You cannot hire a man unless you have something for him to do so that he can earn the money you pay him. You cannot have something for him to do unless you have some capital structure to work with. The capital structure must be safeguarded to perpetuate its use. Excessive taxation, regulation and regimentation which depletes the capital structure must be stopped. For the same reason excessive government costs of any nature whatsoever must be reduced or be removed from business and industry. Keep in mind that business does not just mean the large corporations and industrial organizations but also the thousands and thousands of small businesses. When labor is demanding the 32 hour week at 40 hour pay, just think of the many thousands of small businesses, stores, gasoline stations, garages, etc., whose proprietors work from 7 A.M. to 10 P.M. seven days per week in order to continue in business and make a living. Some folks call them "suckers." Maybe they are, but without them to carry the load there would be no substantial citizens to pay taxes.

Safeguard and encourage business development and increase capital structure. Every \$6,500.00 of new capital structure means one more job. Encourage the development of the machine and prevent any obstruction to its development and use. Such development of the machine will encourage investment in Industry and is our sole hope of improved conditions and a higher standard of living. Machines temper men's labor and make it possible for our civilization to advance.

All credit to "THE MACHINE"



NOPAK AIR CONTROL VALVES

*engineered to
improve with
use!*

Simple, Rugged Design for Efficient, Satisfactory Service

THE NOPAK patented, flat-disc principle results in highly simplified design, rugged construction, no wearing parts! The flat bronze disc is ground and lapped to make a perfect seal with the seat. This exclusive NOPAK feature continues the uniform "lapping-in" process while the valve is in operation. The result... absolutely leakproof sealing surfaces that actually improve with use!

The packless stem assembly positively prevents air or pressure loss through stem leakage... eliminates packing replacement, maintenance service and expense.

Simple, rugged, Packless, Flat-Disc construction is the basic patented feature embodied in all models of NOPAK Valves. It is your guarantee of long-lived, low cost, trouble-free valve operation whether you specify NOPAK Valves for Air, Gas, Oil or Water — or for heavy Hydraulic Service.

GALLAND-HENNING MFG. CO.

2757 S. 31st STREET
MILWAUKEE, WIS.

NOPAK FEATURES

- No Air Loss thru Valve Leakage
- Packless Construction — no maintenance
- Pressure Sealed
- Protected, wear-proof disc and seat
- Quick or throttling action, as desired
- Full pipe area thru Valve.

Write for Bulletin 65.

NOPAK

VALVES and CYLINDERS

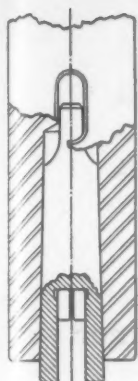
A 2789-1/2

Standardize...

WITH SCULLY • JONES METHODS OF DRIVING TAPS

Universally used for Individual or
Mass Production

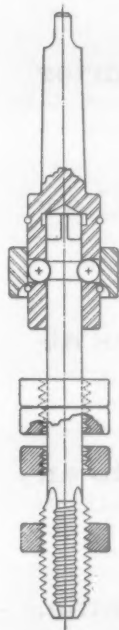
See our Standard Tool Catalog
Number 400



SOLID TYPE
TAP CHUCK
DRIVER



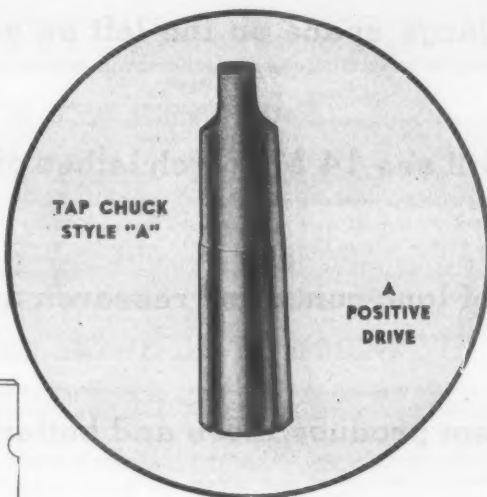
FLOATING HOLDER
TAP DRIVER



QUICK CHANGE
TAP DRIVER

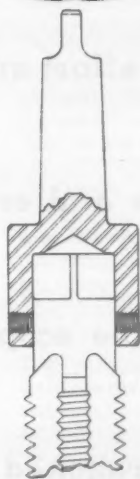


FLOATING, TENSION TYPE,
TAP DRIVER



TAP CHUCK
STYLE "A"

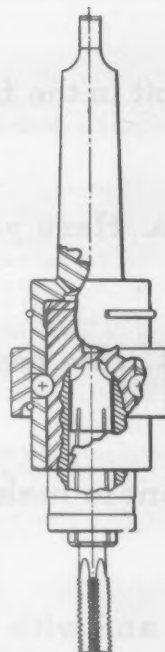
A
POSITIVE
DRIVE



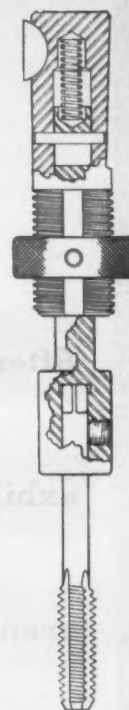
HEAVY DUTY DRIVER
FOR LARGE SIZE TAPS



CLOSE CENTER
TAP DRIVER



MAGIC TYPE
QUICK CHANGE
TAP DRIVER



ADJUSTABLE ADAPTER,
COMPRESSION TYPE,
TAP DRIVER



STYLE "A"
SPRING COMPRESSION
TAP DRIVER

SCULLY • JONES & CO.

1905 SOUTH ROCKWELL ST., CHICAGO, ILLINOIS

Here's What You'll See in the Monarch Booth

After registration, walk into the main auditorium. The Monarch exhibit is the first large space on the left as you enter the great arena. Here you will see 14 Monarch lathes of various sizes and types...the result of long-continued research and unending development to make them produce more and better work...in shorter time, and with less operator effort and fatigue. You will see how Monarch tool maker's lathes and engine lathes, with various attachments, have broadened the scope of profit possibilities to an extent never previously approached through the use of the lathe.

MAKE MORE MONEY

Eight of Monarch's Cleveland Show Machines, representing the latest developments in lathes, are now on display in our new showroom at Sidney, Ohio, where visitors are always welcome.

FOR THE FIRST TIME . . .

A new tool maker's lathe will be shown. It is streamlined and equipped with finger-tip controls—it is fitted with a new device for chasing threads to almost unbelievable lead accuracies.

RECENTLY INTRODUCED . . .

Two of the new 10" x 20" sensitive precision tool maker's lathes, which were recently introduced, will be shown. These lathes operate at speeds as high as 5000 R. P. M. Almost any speed is instantly available. So many people will want to see these lathes, that two of them have been placed on exhibit at the show.

FOR THE FIRST TIME . . .

The new Monarch-Keller-Kelly-shaping lathe will be shown for the first time. It will be doing the work . . . making dies, moulds and shapes impossible to conceive being done on a lathe. You won't believe it unless you see it! Literally, it will reproduce almost any shape that a cutting tool can machine . . . and, in a fraction of the time required

by any other known means. Two new streamlined lathes, each providing 100 to 1 range of spindle speeds, one powered hydraulically and the other electrically, each arranged to automatically maintain any desired surface cutting speed, will be in operation. One will be a tool maker's lathe and the other an engine lathe.

ANOTHER LATHE DEVELOPMENT . . .

Another lathe representing an outstanding Monarch development will be shown machining four different classes of materials, and automatically maintaining the correct or desired surface cutting speeds on all diameters. The profit possibilities in the use of

these machines, on many classes of turning work, are literally breath taking. One large manufacturer, who is using two of these machines, states that they saved their original cost in the first four months' use. Another user reduced costs 75%.

RECENTLY AVAILABLE . . .

Then, you'll want to see Monarch's Automatic Sizing lathe in operation. The controls make the lathe an automatic machine so that one operator can attend two or more machines with no more

effort than is required to handle one manually controlled lathe. These machines have been on the market for only the past few months. You cannot afford to miss seeing these machines in operation.

MAGNA-MATIC

The Monarch Magna-Matic automatic lathe will be shown on a variety of work. The fact that the "set-up" time on these machines is only 5 to 10

minutes or less will be demonstrated, as well as interesting evidence of their unusual metal-removing ability.

Last but not least, we will be Flame Hardening the way surfaces of lathe beds and other parts for our machines, just as we do on a production basis in our factory at Sidney. This revolutionary process of eliminating wear and preserving accuracy, the result of Monarch research, should prove of interest to every user of machine tools.

This is necessarily a brief description of the machines you will see in the Monarch booth. Each and every one of them was developed to meet requests by customers for machines that would help them make more things for more people at lower production costs. We suggest that you allow plenty of time for the Monarch Exhibit.

WITH MONARCHS!

BE MEMBERS

(Continued from page 22)

months, a splendid spirit of good sportsmanship exists and is enjoyed by members and guests.

The rank and file of our membership consists of Tool Engineers who are "Creators-Builders" and as such donate their services to help build this Society into a permanent and everlasting "Temple of Knowledge" and to set it on the same pedestal with other major engineering societies.

Our membership is banded together as one and in unison the Society marches on to greater strength and achievements for the benefit of our nation and humanity.

The American Society of Tool Engineers is a non-profit organization, incorporated under the laws of the State of Michigan.

There is but one officer within the entire structure who receives a monthly salary. Practically all of the work is accomplished by National and Chapter Committees. The business of the Society is administered by a Board of Directors which is elected each year by the membership. The Chapter Chairmen who are elected each year by the membership of the various chapters become Directors of the Board and together with the last five past Presidents of the Society who are also Directors,

govern the entire administration and policies of the Society.

Qualifications for membership in the Society are set forth in the Constitution as follows:

Section C 11-1—Membership in this Society shall be classified into two groups (1) Senior and (2) Junior. In order to be admitted to Senior Membership the applicant shall be either (a) Tool Engineer, who is a man of recognized ability, to plan the order of operations, to layout, supervise the design and manufacture of tools and equipment; or (b) Tool, Die or Machine designer having five years experience; or (c) an Executive possessing knowledge of tool engineering for mass production. Before a person may become a Senior Member he must have attained the age of 25 years.

Section C 11-2—Any tool designer having less than five years experience or any student in a recognized school or college studying tool engineering or tool designing is eligible for Junior membership.

Section C 11-3—This Society shall have power to confer an honorary membership upon any person of the male sex which the members may deem worthy of such a high distinction. No dues or fees shall be required from such honorary member and he shall be entitled to all the social and intellectual privileges of the Society. No voting or ownership rights shall be a part of such membership.

Section C 11-4—Honorary Members shall be persons of acknowledged professional eminence, and their number shall not exceed one per cent of the total membership at the time of their election.

The foregoing are only a few reasons why every Tool Engineer in the country should become a member of the American Society of Tool Engineers. Once a member of this Society the spirit of the Society carries every Tool Engineer into greater heights. It is very contagious. He wants to do something to help build this Temple and in doing so helps himself through professional and financial advancement.

For the convenience of Tool Engineers who wish to join our Society an application blank which is perforated and can easily be torn out, is provided on pages 23 and 24 in this issue of "The Tool Engineer."

San Francisco to Have Chapter

The second Pacific Coast Chapter of A.S.T.E. is due to be chartered in the very near future. A sufficient number of Tool Engineers of the Oakland-San Francisco industrial area have signified their interest so as to make the charter possible. C. W. Horack of the Merco-Nordstrum Valve Company in Oakland is temporary chairman and Walter H. Kassebohm of the Marchant Calculating Machine Company is temporary Secretary. Floyd B. Pettys, long time A.S.T.E. of Detroit and Bridgeport chapters has been instrumental in effecting the chapter organization.

Mention "The Tool Engineer" to advertisers



CHANGES and developments in milling machine design must be more than merely "new" to measure up to the K&T concept of what is "modern" . . . If the "new" offers definite improvements in performance — proven by exacting tests on actual work — K&T engineers pass on these benefits to milling machine users.

Only by such careful analysis and practical tests can basic progress in milling machine design be made . . . Concentrating on the building of milling machines exclusively—for more than 41 years—has won for the Kearney & Trecker Corp. world-wide recognition for the most advanced milling machine design and construction.

KEARNEY & TRECKER CORPORATION
Milwaukee, Wisconsin, U. S. A.

**PROFIT MORE WITH
K&T PRODUCTS**



Milwaukee MILLING MACHINES

SIZE CONTROL



at the
NATIONAL
METAL SHOW
and in
YOUR SHOP

NEW DIAL INDICATORS—GAUGES

Booth K307
at Chicago
National
Metal Show
Oct. 23-27

New super-sensitive Indicators,—new Cylinder Gauges,—the new Electric Comparators,—new motorized Sorting Gauges,—new modifications of existing Gauges,—will be on display at our booth at the National Metal Show at Chicago, Oct. 23-27. You will be able to see a great many size control gauge applications that will interest you. We look forward to seeing you.

FEDERAL PRODUCTS CORPORATION, PROVIDENCE, RHODE ISLAND

FEDERAL

PRECISION MEASURING INSTRUMENTS

Chicago • Cleveland • Detroit • Hartford • Muncie
New York • Philadelphia • Pittsburgh • Rochester

IT'S NEW

(Continued from page 20)

cially in a departure from the conventional but popular aluminum bronze alloys. In addition to representative rough and finished parts for use by Machine Tool and Aircraft industries, embracing a wide range of usage of Ampco Metal and aluminum bronze, there are special copper base alloys, as beryllium copper, high conductivity alloys, and alloys to government specifications in sand and centrifugal castings and, of especial interest at this time, in forgings and rolled and extruded stock.

"Modern" Motor Drives

"Modernize," says Quality Hardware & Machine Corporation, of Chicago, in

presenting a line of Modern Motor Drives for use on a wide range of machine tools. The drives range from 1/2 to 7 H.P., and, compact and efficient, provide individual drive advantages at quite moderate cost. The company claims a saving of 25 per cent over line shaft drive, the Motor Drives permitting machinery to be placed advantageously in relation to production flow.

Barnes' Latest Honing Machine Development

Barnes Drill Company, Rockford, Ill., has produced what is claimed to be the latest development in honing machines. The new design is known as No. 224 Vertical Self-oiling Hydraulic Honing Machine, is equipped with an efficient

hydraulic pump and special valve control for automatic spindle reciprocation. Cycles of reciprocation may be changed to suit, while unit is running, by means of a volume regulator control. The hydraulic motion provides an evenness and uniformity not obtainable by hand or improvised mechanical means, while the special automatic valve absorbs shock at ends of strokes.

Overrun of hone at each end of cylinder is perfectly controlled, preventing bell mouth, barrel shape and taper. Stroke control handle is subject to will of operator for short stroking to make any desired correction in cylinder. It is claimed that cylinders and bearings, up to 4" diameter, as well as piston pin holes and fire arms, may be honed commercially with a better finish than by any other method, the work performed quickly and accurately, hence economically. Any degree of smoothness of wall surface, even to super-mirror finish, is attainable, the makers say.

"Drive-All" Unit

Drive-All Manufacturing Company, Detroit, announces a "Drive-All" unit with an inbuilt 4-speed or 3-speed transmission, a single speed shift lever giving his choice of any speed within the



"Drive-All" unit with 3 or 4 speed transmission

range. With a 2-speed motor, the selection is doubled. Compact, sturdy and efficient, the unit is applicable to all modern machine tools, power presses and production machinery, will drive machines requiring from 1 H.P. to 5 H.P. Gears run in an oil bath, all rotating parts mounted on ball bearings, operate quietly. Belts may be guarded, provision made for adjustment of belt tension.

New Ex-Cell-O Motor Spindle

Ex-Cell-O Corporation, Detroit, announces the new Ex-Cell-O Inbuilt-motor Spindle for internal grinding. Eliminating belts and idlers, the built-in high cycle motor driven spindle is especially designed for high speed precision grinding on internal grinding machines. The principal advantage claimed for this new spindle unit is, delivery of more, and steadier, power to the grind-

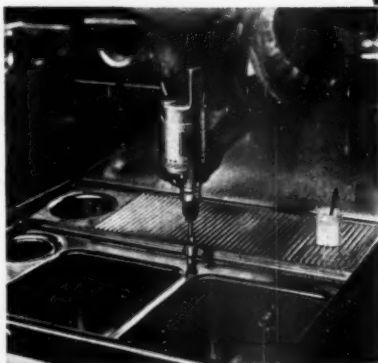
(Continued on page 54)

"TAKING IT"

ON FULL-TIME TOUGH JOBS

• On the real tough jobs . . . on full-time heavy production work . . . you'll find the "old reliables." There's no place for bargain-priced, untested tools. It's on these jobs that the Stanley No. 142 Heavy Duty Electric Drill has made its name . . . maintaining a steady production pace without a hitch.

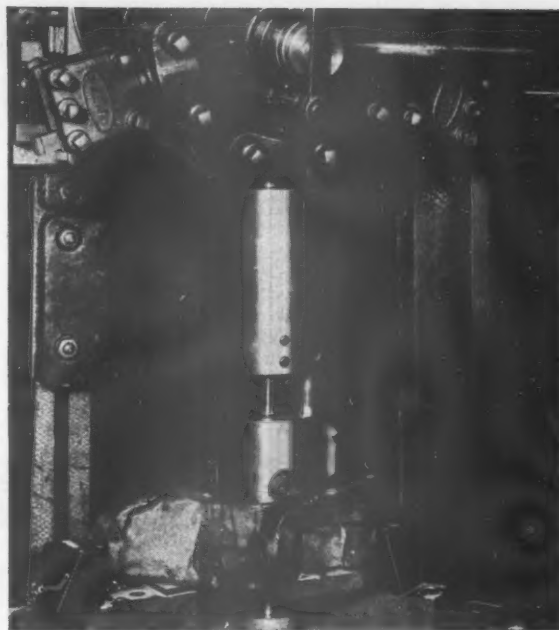
Powerful motor . . . 1/4" heavy duty . . . balanced design . . . nickel steel gears . . . seal type ball bearings . . . strong aluminum alloy housing . . . that's why it stands up. And the wide range of uses . . . drilling in either wood or metal . . . wire brushing and light grinding. Chuck key is held in gear housing. Can be used, with a Stanley drill stand, as a drill press. Try it in your shop . . . ask your Stanley distributor for a demonstration, or write for free literature. Stanley Electric Tool Div., The Stanley Works, 149 Elm St., New Britain, Conn.



STANLEY ELECTRIC TOOLS
"COST LESS PER YEAR"

Haynes Stellite "2400"
tools are standard on
these boring jobs
because
they reduce the cost
per piece machined

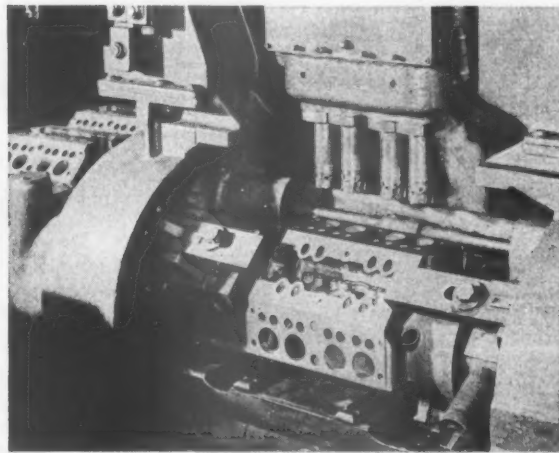
Haynes Stellite engineers are widely experienced in production work. They will gladly help you select the most economical cutting tool for each operation.



Boring an 11½-in. hole in a cast steel spherical bearing for an oil field pumping unit with Haynes Stellite "2400" boring blades.



Boring a 7-in. hole in a malleable iron saddle for the center iron bearing of an oil field pumping unit with Haynes Stellite "2400" boring blades.



Rough-boring a cast iron automotive cylinder block with six Haynes Stellite "2400" boring blades per cutter head. Machining time—43 sec.



Red-hard, wear-resisting alloy of
cobalt, chromium and tungsten

HAYNES STELLITE COMPANY

Unit of Union Carbide and Carbon Corporation



Chicago • Cleveland • Detroit • Houston • Los Angeles • New York • San Francisco • Tulsa

General Office and Works—Kokomo, Indiana

Foreign Sales Department—New York City

Haynes Stellite hard-facing rods and information on other Haynes Stellite Company products also are available through all apparatus shipping points of The Linds Air Products Company

"Haynes Stellite" and "2400" are trade-marks of Haynes Stellite Company.

IT'S NEW

(Continued from page 52)

ing wheel. Slippage and vibration, induced by standard belt drives, is eliminated and close size limits are easier held on high production. Another advantage claimed is a saving on belts, a saving of about \$60.00 per year per unit having been attained in trial installations.

Oakite Soluble Oil

Oakite Products, Inc., of New York, announces two new important developments, the one a cutting oil, the other a cleaner. The first, Oakite Soluble Oil, is a highly improved soluble oil adaptable to most types of turning, boring,

cold sawing, ordinary threading and tapping, light drilling, milling and broaching. Made from paraffin crude, its emulsifying base is a specially prepared petroleum sulphonate. Chemically neutral, the material is said to disperse completely and readily in water, making stable emulsions in ranges from 3 to 60 parts of water to one of material. Emulsion is claimed to have high cooling quality and rust prevention qualities, and resistance to rancidity, thus providing greater life to solutions, the material also effects important economies.

The other new material is Oakite Composition No. 54, particularly developed for cleaning polished steel and buffed copper with high density reverse

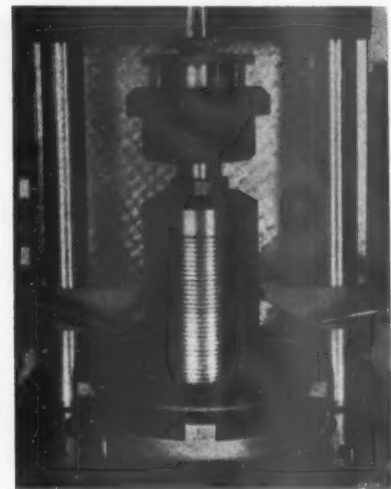
current prior to plating. Said to make practical the complete removal of carbonized smut in one operation, pre-soaking, emulsifying solvents and mechanical rubbing or hand wiping is eliminated. Handling complete cleaning cycle in one operation should effect savings in time and material, besides other advantages.

Colonial-Tractor Gear Broach

An operation requiring a "hole" broach almost two feet in circumference has recently been added to its production sequence by a prominent tractor manufacturer. The operation is for broaching the internal bore of large steel tractor ring gears and was developed in order to increase accuracy in subsequent manufacturing operations, in which the gear teeth are machined in reference to the I.D.

The machine used for this operation is a standard Colonial Broach Company Open Side Utility Press rated at 10 tons. The gear is located in a fixture mounted on a table which may be raised or lowered as to height in relation to the ram through the provision of cross keyways in the face of the column.

The broach itself is approximately 15 inches long and is built up from a number of individual rings, the lower rings being provided with chip breakers. The operation is of the semi-finishing type, a



Colonial-Tractor Gear Broach

final finishing operation being provided later in the machining sequence.

The broach is guided at top and bottom throughout the stroke. It is released by the ram at the bottom of the work stroke, to permit removing the broached forging. An automatic broach handler is provided below the fixture table which raises the broach into a puller after removal of the part, before the ram returns to the top. The machine is set for a stroke of 24 inches, as shown, the 30 ft/minute cutting and 60/ft minute return stroke speed giving a high production for this operation.

Operation is hydraulic throughout.

(Continued on page 59)

SOUTH BEND LATHES

A Modern Lathe at a Moderate Price

For more than thirty years South Bend Lathes have been giving efficient, dependable service in the tool rooms and production departments of America's leading industries. Modern in every respect, capable of the most exacting precision machine work, they represent the maximum lathe value per dollar of cost.

Manufactured in 9", 11", 13", 14 1/2" and 16" swing; 3' to 12' bed lengths; Quick Change Gear and Standard Change Gear types; Countershaft and Motor Drive. Write for a copy of General Catalog No. 98.

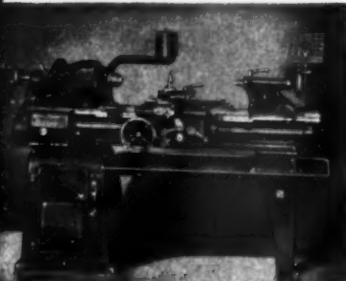
Immediate Delivery can be made on popular sizes from dealer display stocks in principal cities, a few of which are listed below. Write for name of dealer nearest you.

Boston, Mass.
The MacKenzie Machinery Co.
Buffalo, N. Y.
J. L. Osgood Machinery & Tool Co.
Chicago, Illinois
C. B. Burns Machinery Co.
Cleveland, Ohio
Reynolds Machinery Co.
Detroit, Mich.
Lee Machinery Co., Inc.
Los Angeles, Calif.
Eccles & Davies Machinery
Milwaukee, Wis.
W. A. Voell Machinery
Newark, N. J.
J. R. Edwards Machinery

New York, N. Y.
A. C. Colby Machinery Co.
Philadelphia, Pa.
W. B. Rapp Machinery
Providence, R. I.
Geo. T. Reynolds & Son, Inc.



9-inch 1" Collet Capacity Underneath Motor Drive Precision Bench Lathe



11" x 5' Underneath Motor Drive Tool Room Lathe



14 1/2" x 8' Underneath Motor Drive Lathe

SOUTH BEND LATHE WORKS

Lathe Builders Since 1906

322 EAST MADISON STREET
SOUTH BEND, INDIANA, U.S.A.

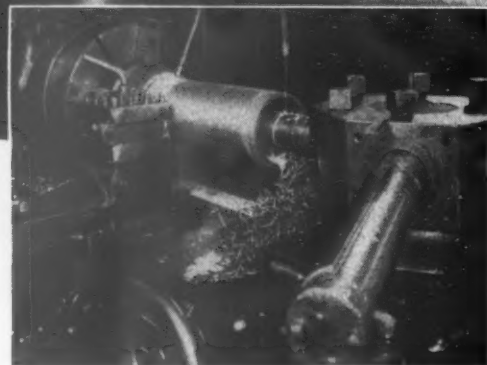


Mention "The Tool Engineer" to advertisers



Here's A SIMPLE WAY
TO SAVE 4 HOURS PER PIECE!

The Gisholt cross feeding hexagon turret is used to excellent advantage in machining these large pump liners, which are $8\frac{7}{8}$ " in diameter by $31\frac{1}{4}$ " long. They are chucked in a Gisholt chuck and machined complete in one operation with Gisholt standard tools and boring bars. Turning and boring operations are carried on simultaneously in both roughing and finishing operations, which greatly reduces machining time. To bore the hole, it is only necessary to set the hexagon turret off center, and use single point boring bars. The material is SAE 4615 steel. From $\frac{1}{4}$ " to $\frac{1}{2}$ " of stock is removed from both the inside bore and the outside diameter, which is a lot of metal. Yet, this Gisholt 4L Heavy Duty Turret Lathe does it quickly and accurately—doing the job in 2 hours and saving 4 hours per piece.



★ The Gisholt bed and headstock are cast in one piece. The beds are extra wide and have hardened steel ways. The Gisholt Cross Feeding turret is built with a dovetail guide and has a taper gib adjustment and a square lock gib at the extreme rear of the slide. These features provide the necessary rigidity and permit fast speeds with multiple cuts and maintain the machine's original accuracy.

Literature on Gisholt Heavy-Duty Turret Lathes is available on request.



"YOUR SMARTEST INVESTMENT TODAY—BETTER MACHINE TOOLS"



GISHOLT
MACHINE COMPANY

1229 EAST WASHINGTON AVENUE, MADISON, WISCONSIN, U. S.

TURRET LATHES • AUTOMATIC LATHES • TOOL GRINDERS • BALANCING MACHINE

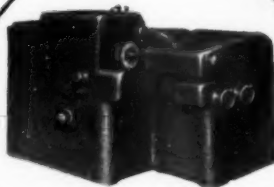


WHEN THE CURTAIN RISES

on the greatest show in Machine-Tool history in Cleveland, October 4, The Landis Tool Company will make its bow with a premiere cast of four completely new grinding machines never before shown and absolutely unique in design and productive capacity. They will be ably supported by seven other Landis Grinders, designed and perfected by trained Landis engineers. Headlining the cast will be the new streamlined Landis 4" x 12" Type H Plain Hydraulic Grinder, a small, compact, highly productive machine that will set the pace for future grinding machine design. The surprise machine of the performance will be the new 15" x 40" Type IW Hydraulic Grinder. This machine automatically loads and unloads the work, is equipped with three large grinding wheels, and yields a tremendous output. ★ Two other entirely new machines, the 18" Radial Cam Grinder with its high degree of accuracy, and the Landis No. 1 Race-a-Way Grinder featuring a high speed spindle operating at 50,000 R.P.M., will make their debut. These, along with seven other grinders, complete a performance stressing precision and finish.

Frankly this ad was prepared before the Machine Tool Show in Cleveland was postponed. Left as it stands, however, it will serve as an excellent means of introducing our new and perfected machines to you.

LANDIS AT THE SHOW



★ 18" Radial Cam
Grinder



★ 4" x 12" Type H Plain
Hydraulic Grinder

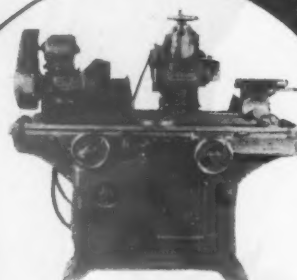


★ 14" x 36" Type C Hydraulic
Universal Grinder



★ 5" x 40" Type D Hydraulic
Cam Grinder

An all Star cast
to be seen at booth 5302
presented by
LANDIS TOOL CO.
WAYNESBORO, PENNA.



★ 12" x 28" Universal
and Tool Grinder



★
No. 2 RACE-A-WAY



★ 10" x 36" Type C Camshaft
Main Bearing Grinder



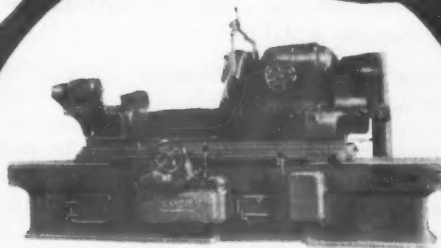
★ No. 1
RACE-A-WAY



★ No. 2 RACE-A-WAY



★ 16" x 40" Type 1W
Hydraulic Grinder



★ 10" x 48" Type D Plain
Hydraulic Grinder

308

WHO SHALL DECIDE?

(Continued from Page 17)

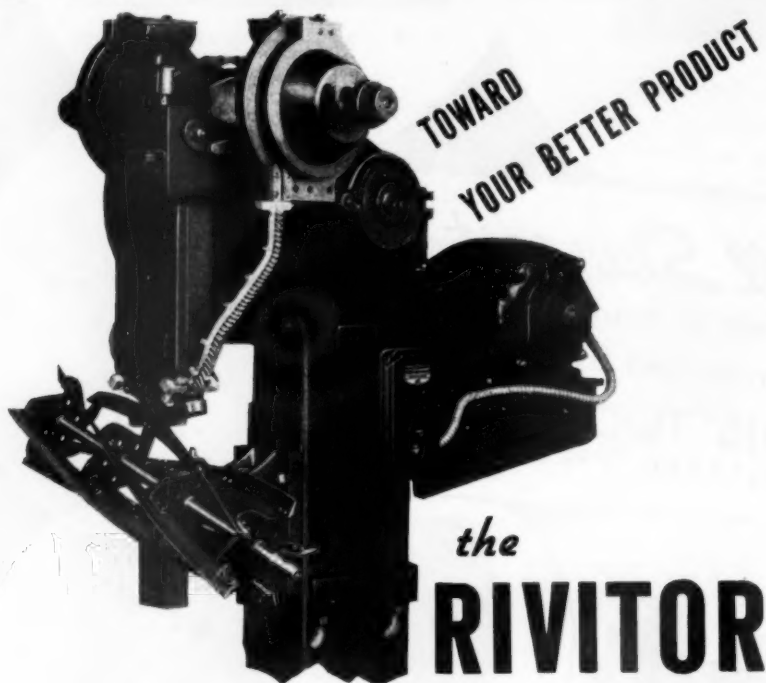
coming along, as a shortage of skilled tool and die makers, the trend—for the time at least—is for standardized tools as far as these serve the purpose. The average shopman is not conversant with the buying of equipment, even though he may have superior knowledge of its operation, while the Tool Engineer has the advantage that he is constantly studying new methods and the machinery to effect them. Since it is not always a question of designing tools, but of buying tools already designed, the decision—or, at least, the

recommendation—of equipment should be left to trained men.

The thoughts projected here may be rebutted on the ground that such systems are in general use, since many large industries are so functioning. But one does not write to educate the educated, but to inform the uninformed. Super-efficiency is for plants operating on intensive production schedules, is not always desirable for the smaller plant which may, nevertheless, desire to compromise between extremes. Anyway, efficiency is a term badly abused; what may be efficiency in one plant could be a headache in another. To arrive at a definite conclusion, or to ad-

vance a definite recommendation, one would have to consider a case by itself.

We should not overlook the educational features of Tool and Machine Shows, which attract not only engineers but shopmen and purchasing agents as well, not to mention executives within management. At such Shows, foremen and engineers can compare notes, can meet on a common ground with the mooted equipment in plain sight and, often as not, operating on product. Shows are an educational institute for apprentices, keep seasoned craftsmen posted on the latest developments. It may not be generally known, but many a tool sold from the floor at the late A.S.T.E. Shows was purchased through recommendation of skilled craftsmen below rank of foreman. Apparently, the latter are not afraid of the "machine" as a factor in unemployment. Purchasing agents, too, are directly benefited as a result of Shows; equipment displayed affords means of comparison not possible with pictured equipment in the catalogues. The general result is that the Shows have the healthy effect of leveling barriers between departments; they also lead one to the conclusion that the men who design the tools of manufacture are the logical arbiters of their disposition and use. Tool Engineers should decide tooling.



effects a stronger riveted joint at rates up to 3200 rivets an hour and creates additional savings by making possible the use of solid rivets.

The riveting is accomplished smoothly, automatically, and with precision. The setting action is actually one of "Coining." The motion proceeds from a fast approach to the riveting position to a slower setting action—giving the metal time to flow.

The Rivitor is shown here "staking" $\frac{3}{16}$ " x $\frac{5}{8}$ " lg. solid rivets for reel and blade assembly.

These machines ably handle many jobs in many industries. Submit samples of your riveting jobs. We should like to show you the type of solid rivet joints that can be effected automatically. We should like you to realize savings that will help you *toward your better product.*

this is a **TOMKINS-JOHNSON** *product*

Factory at 624 N. Mechanic Street, Jackson, Michigan. Agents in principal cities. T-J products also include Air and Hydraulic Cylinders . . . Remote Control Systems . . . Rotating Chucks and Cylinders . . . Clinchers . . . Special Equipment . . . Brownie Coolant Pumps . . . T-J Die Sinking Milling Cutters.

FACTS ABOUT A. S. T. E.

NO. 2 OF A SERIES

•

First Treasurer—Wm. J. Fors,
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Company

Second Chapter Outside Detroit—
Cleveland, Ohio—chartered De-
cember 3rd, 1935

Two chapters were organized and
chartered in 1935—Racine and
Cleveland

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A.S.T.E. Journal name changed to
THE TOOL ENGINEER—February,
1935.

IT'S NEW

(Continued from page 54)

New Sunnen Development

The Sunnen Precision Honing Machine has now been made more universal by the development of a special adapter to be used with the Sunnen Cylinder Hone.

The illustration shows the Cylinder Hone mounted on the Precision Honing Machine.

The adapter is made so the Sunnen Cylinder Hone can be attached to the drive shaft of the Sunnen Precision Honing Machine, and used in the same manner as a mandrel.



Sunnen-Special Hone adapter

The adapter increases the size range of the machine to handle sizes from 2½" to 7" in diameter. The standard adjusting device on the Cylinder Hone is used to expand or contract the stones for different diameters.

Excellent finishes can be obtained and errors of out-of-roundness held to within half a thousandth.

Additional information will be furnished by Sunnen Products Company, 8002 Manchester Avenue, St. Louis, Mo.

Grob Combination Sawing and Filing Machine

Grob Brothers, Grafton, Wis., are out with the new NS-24 Combination Band



Grob-Combination filing & Sawing Machine

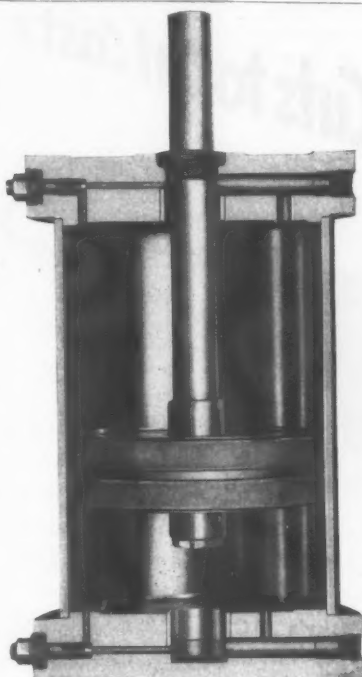
Saw and Chain Filing Machine, designed to fill demand for larger throat. The 24" throat on the new machine is obtained by use of two 24½" pulleys having inlaid rubber bands for operation of saw blade, alongside of which is a groove for operation of the file chain. The lower drive pulley provides positive drive to file chain, insuring long life to chain because of minimum tension.

A nice feature is that, the saw blade and file chain tracked alongside each other, separately, change from sawing to filing (or vice versa) is effected in less than a minute since saw guides and file attachments can be left on machine at all times. Saw blade and file chain tension is obtained with a hand crank, shown at upper right of machine,

while an indicator is provided for chain and various widths of blades. Handily adjacent (shown on column at left) is a Grob Type BW Butt Welder, used to quickly weld saw blades for internal cutting.

A ½ H.P. motor drives lower pulley through V-belt reduction providing five speeds, 60, 90, 135, 225 and 375 feet per minute to either file or saw. Base and column of machine are of welded steel construction; the rugged table, which tilts in two planes, is of cast iron. A table feed is provided, operated by a foot lever. Distance from floor to table is 40", overall height 80", die space—i.e., distance from table to column—is

(Continued on page 60)



TOWARD
YOUR BETTER PRODUCT



announces . . .

**HARD CHROMIUM
PLATED Cylinder
walls and piston rods.**

DURING intervals of non-use and before installation, cylinders are ordinarily susceptible to rust. From the various methods of preventing this condition, Hard Chromium plating was selected because, in addition to its ably solving the rust problem, it becomes an important factor in increasing the efficiency of the cylinder. The same moisture (from the condensation of compressed air) or water (when the cylinder is used for water-hydraulics) which would ordinarily cause corrosion, now acts as a lubricant on these hard chromium plated bodies and piston rods actually increasing the "slickness" of the surface. This in combination with the polished, smoother surface obtained means less friction and prolonged packing life. Of no less importance is the fact that these cylinders with this new feature are now being furnished at no extra cost. More "service" features are described in our Catalog No. 36-A. It will assist you in selecting the type of cylinder that will help you toward your better product.

this is a **TOMKINS-JOHNSON** *product*

Factory at 624 N. Mechanic Street, Jackson, Michigan. Agents in principal cities. T-J products also include Oil Hydraulic Cylinders . . . Remote Control Systems . . . Rotating Chucks and Cylinders . . . Riveters . . . Clinchers . . . Special Equipment . . . Brownie Coolant Pumps . . . T-J Die Sinking Milling Cutters.

IT'S NEW

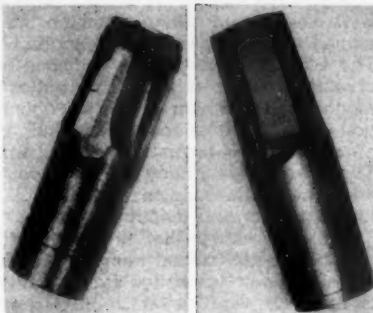
(Continued from Page 59)

12 3/4". Total weight 1500 pounds, floor space 26" x 42".

Salvaging Carbide Tools

In view of the wide use of Tungsten Carbide tipped tools throughout American industry, the recent announcement by the Super Tool Company, Detroit, Mich. of the inauguration of their new Carbide Tool Salvage Division is very interesting.

It is, without a doubt, a necessary service as the average user of Carbide Tipped Tools has on hand an assortment of broken, undersize, or obsolete tools, too costly to scrap, but of no use in their present condition.



BEFORE
This tool was "wrecked" by a bad casting.

AFTER
It was repaired, as good as new, for 65% of new tool cost.

Broken tools can be re-tipped if the shank is fairly good. Tips can be remounted when the shank is beyond repair. Reamers, counterbores, and other round tools as well as gauges, can be expanded and restored to usable size. Obsolete tools can be reground to new shapes or the tips remounted on new shanks.

An example of what can be done with such tools is shown to the left.

Barber-Colman Type V Vertical Hobbing Machine

Of a design so unique that it arrests immediate attention, Barber-Colman Company, Rockford, Ill., presents a new Vertical Hobbing Machine—Type V Vertical—which, the makers claim, is producing remarkable results. From careful scanning of the material at hand, we feel sure that this machine will be of especial interest to our read-

Combining Cuts to Cut Costs



**Special Purpose
McCrosky JACK-LOCK
Tool Engineered to the Job
Bores 3 diameters, hollow
mills, faces and chamfers**

HERE'S a good example of how McCrosky's JACK-LOCK Wedge keeps tool design simple and practical when operations are combined to cut costs. The powerful and compact wedge occupies a semi-circular recess in the tool body. It allows ample room for all blades needed for multiple operations, permits sturdy body sections and abundant chip clearance. . . . Also incorporated in this special-purpose tool are the other JACK-LOCK features illustrated below, individual adjusting screws behind the blades and TRU-GROUND Serrations in the blades.

For your reference file ask for Bulletin 15-M showing standard JACK-LOCK Milling Cutters, and also Bulletin 15-F showing special JACK-LOCK Tools engineered to definite jobs. When your job requires combining cuts to cut costs, send your work prints for a McCrosky JACK-LOCK layout.



MCCROSKY TOOL CORPORATION, 1340-70 Main St., MEADVILLE, PA.



Barber-Colman Vertical Hobbing Machine

ers. Ultra modern in design, carefully guarded, with very accessible operating levers and fully visible gages and controls, the machine is compact, powerful and productive. In the words of the makers, it "presents many interesting and profitable possibilities."

The vertical design has the advantage that it conserves floor space, is completely accessible from front and rear, and, the design has resulted in enormous strength and rigidity. Other advantages claimed are: Gravity intensifies stabilizing effect as the work slide feeds upward, aids rapid traverse downward, causes chips and coolant to fall directly into chute provided, the whole contributing to simplified construction and operation.

There is easy set-up; speed, feed and indexing gears can be quickly selected and easily mounted. Positive depth of cut and movement of work-slide are established by simple adjustments, while central controls give operator complete control of individual movements in cycle. The cycle is automatic, and employs, in very effective combina-

(Continued on Page 65)



PRECISION TOOL ROOM LATHE

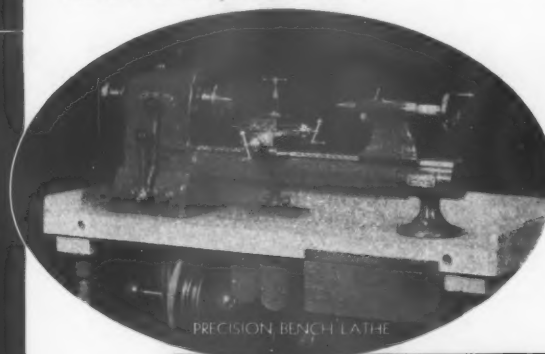


PRECISION HAND SCREW MACHINE

Follow THIS TREND SET BY HARDINGE

Extensive use of Hardinge Precision Lathes, Screw Machines and Milling Machines by various U. S. Government Departments is indicative of the acceptance of Hardinge logic that Small Machines should be used for Small Work.

Investigate the possibility of these machines on your work. Hardinge offers you the means of attaining new standards for accuracy, speed and finer results on small precision work.



PRECISION BENCH LATHE



PRECISION MILLING MACHINE

U. S. Government Departments Which Purchased Hardinge Machine Tools in 1937, 1938, 1939.

DEPARTMENT OF COMMERCE

Bureau of Census, Washington, D. C. . . .
Bureau of Air Commerce, Washington, D. C. . . .
National Advisory Committee for Aeronautics, Langley Field, Va.

WAR DEPARTMENT

Fairfield Air Depot, Osborn, Ohio . . . Fort
Sam Houston, San Antonio, Texas . . . Frank-
ford Arsenal, Frankford, Pa. . . . Hawaiian
Ordnance Department, Honolulu, T.H. . . .
Air Depot, Sacramento, Cal. . . . Wright
Field, Wright, Ohio . . . Springfield Armory,
Springfield, Mass.

NAVY DEPARTMENT

Fleet Air Base, Coco Solo, C. Z. . . . Naval
Air Station, Anacostia, D. C. . . . Naval Air
Station, Pensacola, Fla. . . . Naval Aircraft
Factory, Philadelphia, Pa. . . . Naval Gun
Factory, Alexandria, Va. . . . U. S. Navy
Yard, Washington, D. C. . . . Naval Research
Laboratory, Bellevue, Anacostia, D. C. . . .
Naval Torpedo Station, Keyport, Wash.

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GLENCO

FLOATING TOOLHOLDER

*Corrects Machine Tool Misalignment By
Producing TRUE and ACCURATE Holes*



Also Manufacturers of

**Utility
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FLOATING
HOLDERS
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REAMERS
COUNTERBORES
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ASSEMBLIES
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END MILLS
WOODRUFF CUTTERS
CORE DRILLS

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DETROIT

MICHIGAN

October Chapter Meetings

Chapter Meeting Announcements must be received on or before the 20th of preceding month to appear on this page. Members and friends of The Society contact Chapter Secretaries for meeting details if your announcement does not appear below.

BALTIMORE

October 9, 1939—Dinner 7:00 P.M., Technical session 8:00 P.M. Sears Roebuck Auditorium, North & Harford Ave.

Speaker: Mr. J. W. Mullen, Representative of The Polaroid Company.
Subject: "The Development of Polaroid Glass and Its Application to Industry."

Reservations: Mr. Stanley S. Johns, 806 Evesham Ave., Baltimore. Phone Tuxedo 2127.

BUFFALO

October 19, 1939—6:30 P.M. Dinner, Technical Session 7:30. University Club 546 Delaware Avenue. Members \$1.10, non members \$1.50.

Speaker: G. H. Sandborn, Fellows Gear Shaper Co.
Subject: "New Developments in Involute Gearing. Illustrated by slides."

MILWAUKEE

Oct. 12, 1939—Republican House. Dinner: 6:30 p.m. Technical session 7:30 p.m.

Speaker: Mr. Walter Eddnes, Metallurgist Ampco Metal, Inc.
Subject: "Modern Non-Ferrous Metals and Their Application to Tools and Tooling." Illustrated with slides.

Plant visitation and refreshments after meeting.

NEW YORK—NEW JERSEY

October 17, 1939—Dinner 6:30; meeting 8:00, Hotel Robert Treat, Newark, N. J.

Speaker: Lt. Col. J. K. Clement, New York Ordnance District.
Subject: "Industrial Preparedness." Will also demonstrate the new Garand rifle.

Reservation: Ben Brosheer, Medallion 3-0700.

Important: This is a joint meeting with New Jersey Chapter of American Society for Metals.

ROCHESTER

October 18, 1939—7:45 P.M. Lower Strong Auditorium, University of Rochester.

Speaker: G. H. Sandborn, Fellows Gear Shaper Co.
Subject: "New Developments in Involute Gearing."

Reservations—Send reservations for dinner at Todd Union to C. H. Wallace, 116 Trafalgar St., Rochester.

ROCKFORD

October 13, 1939—Hotel Faust, Rockford. Joint Technical Session with combined Engineering Chapters of the Rockriver Valley area. Also visitation of ten of Rockford's factories Oct. 13 and 14. Open to all members of tool, die and kindred industries.

SCHENECTADY

October 16, 1939—8:00 P.M. Rice Hall, General Electric Company.

Speakers: G. H. Sandborn, Fellows Gear Shaper Co.

Subject: "New Developments in Involute Gearing." Illustrated by slides.

ST. LOUIS

October 20, 1939—Marquette Hotel.

Speaker: Dr. Fred Olsen, Chief of Research, Western Cartridge Co.
Subject: "Explosives and Ammunition Production."

TRI-CITY

October 11, 1939—6:30 Dinner. Technical Session 8:00, Fort Armstrong Hotel in Rock Island.

Speaker: Doctor Phillip Thomas, Research Engineer, Westinghouse Electric & Manufacturing Company.

Subject: "Fluorescent Lamps," "Light Beam Chimes," "Cold Light," "Precipitrons" (filtering devices), etc. He will also demonstrate a new metal that possesses a ringing quality even at a temperature of 1200 F.

TWIN CITIES

October 18, 1939—Dinner, 6:30 p.m. Dunwoody Institute.

Speaker: Francis Trecker

Subject: "A New Technique in the Art of Tool and Die Making."

USE A HEALD FOR PRECISION PRODUCTION PROFIT

**INTERNAL
GRINDING MACHINES**

PLAIN AND SEMI-AUTOMATIC
FULL AUTOMATIC
CHUCKERS OR CENTERLESS
FOR VERY SMALL OR EXTRA
LARGE WORK

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**ROTARY
SURFACE GRINDING
MACHINES**

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BORE-MATICS
FOR PRECISION BORING,
FACING, TURNING
SINGLE AND DOUBLE END

HEALD HAS A COMPLETE LINE OF
PRECISION FINISHING MACHINES
TO SELECT FROM USING EITHER
THE GRINDING OR BORING
METHOD.

ONE OF THESE MANY MACHINES
WILL EXACTLY MEET YOUR
REQUIREMENTS.

THE HEALD MACHINE COMPANY
WORCESTER, MASS.

TOOL ENGINEERS MUST QUALIFY

(Continued from Page 21)

whether it is to an advantage or to a disadvantage; this is important.

Be convinced of the authenticity and soundness of your ideas and data. The more convinced you are in the merit of your reports, the more convincing it will be to the reader and you will be able to shake off the fear of it being in error or open to criticism. They are intended to be useful, therefore, their characteristics should be convincing. They are requested, usually, to be used as a basis from which to arrive at a decision and in a large percent of the cases, are required as soon as possible. Be prompt but do not rush into inaccuracies, poor

judgment, a sacrifice of facts, or resort to unconfirmed sources of information to gain time. Perhaps you will be able to suggest, in addition to what is requested, some information that will not be an advertisement for yourself but of real interest to the reader.

Don't Ramble

Rambling may introduce too many details and contribute toward redundancy, or the use of more words than are required to express the meaning in forceful writing. The ratio of conveyed ideas to the number of words should be exceedingly high. Rambling may also run into repetition which is sometimes effective but as a rule objection-

able. Careless repetition of words or phrases is caused by an unwillingness to search for a substitution, or may be caused by a limited vocabulary. Slang, wit, humor, or sarcasm have no place in a business report.

Do your statements specify what, when, where, why, how, quantity, description, what will be the results, what circumstances, witnessed by, recorded by, and on what authority?

Logical Sequence

Arrange material in logical sequence to the summary. This process can be chronological, point of view order to their importance, or in logical order, but the conclusion must contain the required definite information. A basis of comparison should always be submitted, if possible, to allow the reader information on which to base his judgment. Supporting data and confirmation should be prevalent. Determine how technical the reports should be and give consideration to the reader as to how familiar he is with the science and proceed accordingly, as he may be a layman on the subject and would not understand. Technical language is a means to achieve brevity in description.

To be illusive or tend to misrepresent any data that might be a reflection on yourself, should be avoided. Definite facts are required regardless of who might be subject to criticism by the information. Avoid giving consideration to any information which is of interest to yourself only, without you are definitely assured that it will be of value and interest to the reader. Consistency should be a watchword in that all statements, facts, etc., must be in agreement with each other. Evaluate the worth of your statements in correct order so that too much importance will not be given to the subordinate ones.

A busy person will not search for the proper information throughout the report, therefore, a most essential characteristic is to be able to summarize, giving all the information definitely, clearly, and set up in easy form to read and interpret with detail segregation on items independent of each other. If the reader misunderstands or fails to know the specific conclusion, the report has been written in vain. Expressions or data irrelevant to the subject are of no value.

Remember that an analysis report is, in practically all cases, information from which someone wishes to base his judgment to arrive at a correct decision.

NEXT ISSUE

The November issue of "The Tool Engineer" will be a SOUVENIR EDITION of the A.S.T.E. National Meeting being held in Cleveland, October 6 and 7. Digests, if not complete reports, will be given in this issue, of all the important technical articles, speeches and papers presented. Watch for it—out Nov. 2.

Why TOOLROOM FOREMEN AND CHIEF INSPECTORS

CHOOSE TAFT-PEIRCE TOOLROOM SPECIALTIES

**28 SPECIAL TOOLS
IN STOCK
at
Reasonable Prices**

Sine Bars, Blocks & Fixtures Slotted Angle Irons

Magnetic V-Blocks & Parallels

Adjustable Angle Plate Universal Right Angle Irons

Hardened and Ground Steel Parallels

Foremen find that these *standardized* specialties save time ... and widen the range of machine application (a point of prime importance to tool shops and small manufacturers).

Inspectors in precision plants know that these tools are vital safeguards to accuracy. They also know the value of being able to secure such equipment immediately from stock.

Shown here are a few of the specialties developed in the T-P plant to solve problems of set-up ... every item made to Taft-Peirce standards of quality and accuracy. Complete line is described in our Handbook. Write for a copy.

The
TAFT-PEIRCE
MANUFACTURING CO.

Woonsocket, R. I.

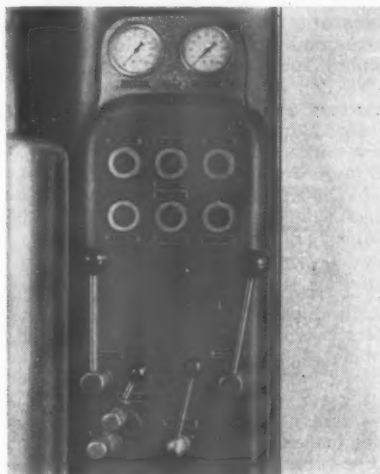
A COMPLETE LINE OF SMALL TOOLS & GAGES



IT'S NEW

(Continued from Page 60)

tion, hydraulic pressure for actuating the hob carriage, clutches and clamping means, with mechanical drives to hob spindle and screw feed and electrical drives to hydraulic unit, coolant pump and work-slide traverse. Cycle includes rapid traverse with conventional or "climb" cutting as determined by setting of controls.



Control Panel—Barber-Colman Type V Hobbing Machine

A circular, furnished on request, gives all data and specifications, is instructive and complete. To the initiated, however, the photographs are revealing, tell a very complete story. As shown in Figs. 1 and 2, pressure gages and control levers are mounted on column, right, very convenient to operator. Coolant is in base of machine; even an adjustable light bracket is provided, conveniently guarded within the column. The design seems to bear out, quite fully, the maker's claim that it is a producer.

New Scheer Developments

George Scherr Co. Inc., of 128 Lafayette St., N. Y., was to have exhibited at the Central Armory, Cleveland, with one of the largest lines it has ever sponsored. Among them, were several machines shown in the United States for the first time, including the Deutsche Niles Vertical Grinder for spur, spiral gears and pinions. This is a universal machine claimed to generate the accurate involute gear tooth, is designed so that it does not require master gears or racks, templates, base circles, index plates or pantographs.

Also to have been shown in America for the first time was the Tornos High Speed Swiss Automatic for production of pinion blanks, a Koepfer Magazine Feed Pinion Hobbing Machine for generating teeth on gear wheels, a Safag Pinion Cutting Machine for cutting pinion teeth in two cuts, and a Steinel Pivot Burnishing Machine for finishing

pivots. Also, there was to have been a Hille-Auerbach High Speed Opticians' Turret Lathe, with novel features.

In addition to the machines mentioned, there was to have been a display of Leitz Toolmakers' Microscopes, Measuring Microscopes, Projectors; Compar Gages for internal and external measurements, Microlux Comparator Gage, Parkson Gear Tester, Unispa Indexing Head and Busch Metallographic Microscope, truly a diversified display. It would be a good idea to get literature on this equipment, which the Scherr Co. will gladly forward.

Proconier

Proconier Safety Chuck Co., Chicago, has developed a new Universal Air Operated Tapping Machine, which the makers claim has outstanding features.

One feature is the complete control of the tap, through a unique air-operation unit, which definitely controls production and accuracy and practically eliminates tap breakage. Compressed air actuates tapping head in both drive and reverse directions. The secret of its success, in precision tapping, is said to be the straight-in-line compensating springs within the adjustable tension housing; these compensating springs assure the proper, uniform tapping pressure both in driving "in" and backing out the tap. Should the tap jam, or hole be out of line, the springs merely compress while the air unit completes its cycle without damage to tap or work.

Feed rate, for tapping and reverse, is controlled by two needle valves, one

Mall Flexible Shaft Machines

POWER PLUS TOOLS A Size and Speed for Every Need!

No matter what kind of polishing, grinding, sanding or buffing you may be doing in your plant, you can be sure that there is a MALL flexible shaft machine or portable power tool with the proper attachment for your work. They save time and tedious labor and do your work faster and easier.



MALL 18,000 r.p.m. universal diesinker unit. Does faster, easier grinding at lower costs!

Investigate MALL tools today. Write for complete data. Without cost or obligation our engineers will gladly assist you in selecting the proper tool and attachment for your work.

100 different machines and attachments

MALL TOOL COMPANY

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MALL GRINDER WITH 1/4 H.P. VENTILATED MOTOR



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MALL FOUR-SPEED COUNTERSHAFT GRINDER WITH 1/4 H.P. VENTILATED MOTOR

MALL TOOL COMPANY, 7766 South Chicago Avenue, Chicago, Illinois

Without cost or obligation, please send literature and full information on MALL flexible shaft machines for the following application.....

NAME.....

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SHELDON

ARBOR PRESSES

In 10 Sizes,
from ¼ to
12 ton Pressure
Capacities

Catalog FREE



A complete line of bench and floor presses with improved designs, handier, more versatile and stronger, size for size. Frames are semi-steel, Rams and Gears, alloy steel, heat treated and ground.

Machinery Dealers

Some territories Still open

Sheldon Machine Co. Inc.

1619 N. Kilbourne Ave.
Chicago, U.S.A.

IT'S NEW

(Continued from Page 65)

for down stroke, one for up; these valves operate independently of length of spindle stroke, are readily accessible and accommodate the various sizes and



itches of taps on various types of material. A trip arm adjusts spindle travel from ¼" to ¾". An automatic control valve can be opened for continuous

operation, set for foot-button control or turned to "off" position. Continuous or automatic operation sets pace for operator and, reducing fatigue, greatly increases production.

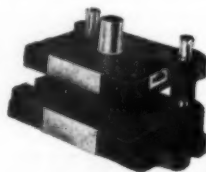
The machine is flexible, has a range from #2 to 5/16" tap in steel, ¾" in cast iron and ½" in brass, using two interchangeable heads. Built-in automatic coolant pump supplies abundant liquid, drains back into tank through filters. Machine includes unbreakable transparent air line lubricator, air cleaner, pressure regulator and gage, is equipped with tool rack, enclosed belt guard, lamp and graduated depth gage. "V" belt drive transmits ample power through cone pulleys, with speeds 390, 745, 1280 and 2050 RPM, sufficient for the entire tap range. The machine has a large work table, crank raised, adaptable to any type of fixture and can be had with or without automatic coolant pump. Bulletin available.

New Hydraulic Developments

Logansport Machine, Inc., is out with several innovations of an interesting nature, with further developments in the offing. A new "Logan" Hydraulic Cylinder is small, compact, rigid and neat, uses no conventional gaskets but a revolutionary sealing principle which automatically seals, and the greater the pressure the greater the sealing. The line includes all styles of mounting, with pipe flanges constructed so that connections can be made from any di-

(Continued on Page 72)

DANLY PRECISION DIE SETS



Danly All-Steel Sets
Danly Commercial Sets
Danly Die Makers' Supplies

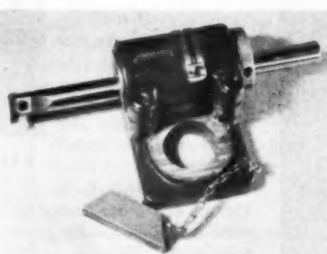
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24-Hour Service for 85% of
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DANLY DIE MAKERS' SUPPLIES



The Everede Boring Bar Holders are adjustable to fit various size lathes. (Bushings are furnished with each boring bar for use in the Holders.) Everede Holders keep the boring bar in a horizontal position, regardless of any change in the size of the lathe, within limits.

The No. 1 Boring Bar Holder is used on precision bench lathes from 7" swing to and including 9".

The No. 2 Holder is used on engine lathes from 8" swing to and including 12", and the No. 3 Holder on engine lathes from 12" swing to and including 24".

The Holders are made of case-hardened alloy steel. A tool post block is attached to the engine lathe Holders by a chain as shown.

Send for descriptive folder.

EVEREDE TOOL CO.

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184 N. WACKER DRIVE, CHICAGO
Representatives in principal cities

T. H. L. FRONT LEVER BENCH PUNCH



PRICE WITH ONE
PUNCH AND ONE
DIE—

\$37.00

Immediate
Shipment

Built for hard, tough work — die cannot lose alignment with punch—all parts interchangeable.

Capacity—½" holes through ⅞" steel; ⅝" through ¼" steel. Can also be made for holes up to ¾" in thinner metal. Stock punches and dies available from ⅛" to ½" by 64ths. Weight, 70 lbs.

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(Est. 1890)

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Does It Take You HOURS or MINUTES To Fit and Grind Contours?

In making your estimates do you have to allow for hours and hours of slow hand work when fitting irregular difficult contours, irregular shapes and uneven surfaces?

With BOYAR-SCHULTZ Grinders workmen can develop their skill to the fullest extent, doing in MINUTES, work that formerly took HOURS—and doing it BETTER.

BOYAR-SCHULTZ HEAVY DUTY GRINDER No. 2 with MULTIPURPOSE HEAD was designed and developed by Tool Engineers who are thoroughly familiar with the everyday problems of the tool and die maker. It is a smooth running Machine Tool that efficiently handles tool and

die work of larger and more difficult types. With it, heel or base punches can be ground in full view. All controls are located to operate conveniently from the front; large table tilts 10°; Ball bearing, 2 H. P. motor turns either spindle at approximately 10,000 R. P. M. with vertical oscillations of 100 per minute.

BOYAR-SCHULTZ PORTABLE GRINDER No. 1 is solving the contour grinding problems of hundreds of shops in this country and abroad. It is a TIMESAVER on smaller work for shops requiring grinding and fitting to close limits. Operates at approximately 20,000 R. P. M.

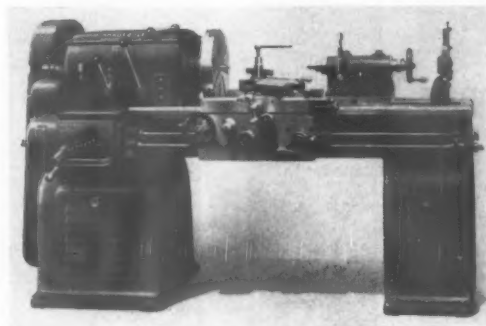
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NEW BRADFORD LATHE



MADE IN
12" — 14" — 16" SIZES

Bulletin No. 246

The Bradford Machine Tool Co.

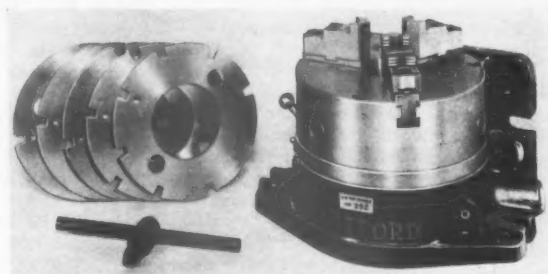
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Established 1840

Dealers Wanted in Some Territories.

The Hartford "SUPER-SPACER"



ACCURATE—RIGID—FOOL-PROOF

The Hartford Super-Spacer is a new and superior spacing device for the rigid control of accurate machining operations within its scope. It is simple and rugged in design. Substantially and precisely constructed and adaptable for a multitude of machining operations. Speeds and feeds limited only by the capacity and power of the machine are available with the Super-Spacer. Heavy cuts do not impair the accuracy of indexing, which is extremely rapid and positive—without the possibility of error. This chuck provides a secure and sufficient means for holding most jobs.

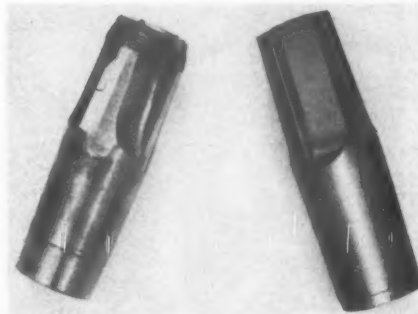
For further information write

THE HARTFORD SPECIAL MACHINERY COMPANY

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DON'T THROW AWAY VALUABLE CARBIDE TIPPED TOOLS. \$ \$



• Write at Once for Our Folder on Carbide
Tool Salvage

Tips Remounted—Shanks Retipped
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Grinding — Lapping

CARBIDE TOOL SALVAGE DIV.

SUPER TOOL COMPANY

21650 HOOVER RD.

DETROIT, MICH.

PRODUCTION PERSPECTIVES

(Continued from Page 26)

Work is progressing in Springfield on an addition to a factory building for the Van Norman Machine Tool Co. The new addition will be of brick construction, 19 x 81, two stories, with concrete foundations, flat tar and gravel roof and steam heat.

Frank J. Weschler has been named general manager and George D. Gilbert, general sales manager, of the Baldwin-Duckworth division of the Chain Belt Company, with plants in Worcester and Springfield. At the same time it was announced that Weschler, Gilbert and George H. Empsall had been elected directors of the parent company and that Weschler and Empsall had also been elected vice-presidents. The consolidation with the Chain Belt Company was effected as of Aug. 1 and will give the Baldwin-Duckworth division the sales and distribution advantages of 22 branch offices throughout the country as well as a number of foreign outlets.

George G. Bulkley, president of the Springfield Fire and Marine Insurance Company, has been elected a member of the board of directors serving the Van Norman Machine Tool Company of Springfield. Bulkley succeeds Robert L. Fowler of Chicago who resigned.

Promotion of Fred G. Gronemeyer to plant manager of the Springfield plant of the Plastics division of Monsanto Chemical Company has been an-

nounced by John C. Brooks, vice-president and general manager. Gronemeyer had been resident engineer for the plant since April of this year. From 1924 to 1929, he was employed on design and construction work by the Barber Asphalt Company, Madison, Ill., and in May, 1929, joined Monsanto as a plant maintenance and construction engineer. In 1935, he was transferred to the research department as a development engineer, and in July, 1938, was sent to Springfield, as development engineer for the Plastics division plant.

Andrew B. Holstrom has taken over his new duties as works manager of the abrasive division of Norton Co., Worcester, succeeding Hugo H. W. Beth, who retired after 34 years' service. Mr. Holstrom has been with Norton Co. since 1920. He returned from Welwyn, England, where he was general manager of the Norton Co. plant, to take over his new post. Mr. Beth was honored by more than two hundred associates including officials, foremen and superintendents, at an informal reception.

Joseph M. Lasell, 75, who retired several years ago as director and assistant treasurer of the Whitin Machine Works, Whitinsville, died recently after a brief illness.

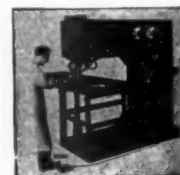
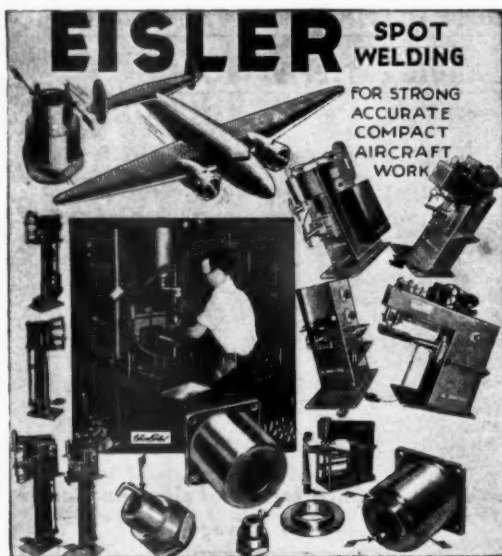
Paul B. Brown, who will be managing director of Australian Abrasives, Ltd., a Norton Co. affiliate, has left Worcester on a trip that will take him

practically around the world as he heads for his new post. Joining with Australian and English interests, the Norton Co. has constructed an abrasives plant on the outskirts of Sydney. Mr. Brown has been on the sales force of the company for fourteen years. Before going to Australia, Mr. Brown will spend two months at the English plant of Norton Co. at Welwyn Garden City on the outskirts of London. He will arrive in Australia about December 1.

J. W. Smith, vice-president and general manager of the Boston and Maine Railroad, announces that the company's repair shops at Concord, N. H., have reopened. The shops, which perform nearly a third of all repairs made by the company, were closed for a summer vacation period. Nearly 500 employees in the Billerica, Mass., locomotive repair shops returned to work on September 11. About 180 men returned to the Concord car repair shops on the same day. About 60 men returned to their posts in the Concord engine house shop on September 5. On the same day, 70 men reported for work at the Keene, N. H., shops. The repair shops of the Maine Central Railroad at Waterville, Me., reopened on September 5 with a force of 135 men.

Payrolls disbursed to workers in Rhode Island manufacturing and non-manufacturing industries in August amounted to \$14,691,286, an increase of 11.4 per cent from the August, 1938,

(Continued on Page 70)



Mr. Production Engineer

IT'S UP TO YOU to recommend the best suitable SPOT WELDERS to get the greatest production for your boss. CHAS. EISLER has over 50,000 SPOT WELDERS in daily use. Hence they fill the Engineer's bill from 1/4 to 500 KVA standard and special SPOT WELDERS.

We also make standard and special TRANSFORMERS of all kinds. If you need a special TRANSFORMER let us quote you.

Investigate our NEW VERTICAL PRESS TYPE WELDERS. It's something NEW for precision work. Foot or air operated, bench or pedestal models, many types and sizes.

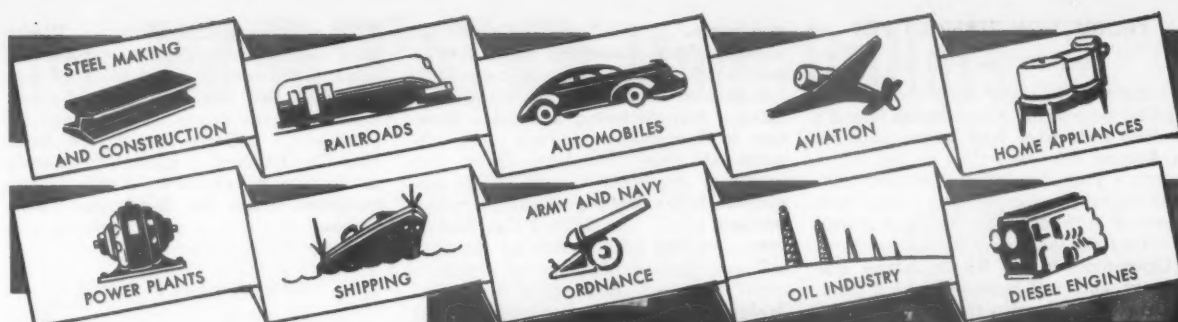
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- Many knotty metal cutting problems have been solved for them by NATIONAL Service Engineers.
- There is a Factory Branch or a Distributor near you.



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PRODUCTION PERSPECTIVES

(Continued from Page 68)

volume and a gain of 7.4 per cent from the July aggregate. All of Rhode Island's leading industries had larger payrolls in August this year than in the same month a year ago. Manufacturing payrolls averaged 15.1 per cent larger than those of August, 1938, and non-manufacturing payrolls were up 4.7 per cent.

Operations in the Rhode Island machinery and tool industry which have shown broad improvement during recent months and which reached the highest level since the peak of the 1937 upturn during the month of July, are likely to show further substantial gains during the months ahead, coincident with the development of large scale hostilities on the European battlefronts, manufacturers say.

An acute shortage of skilled labor in Connecticut industrial cities, notably Bridgeport, is giving cause for concern to factory management. The Bridgeport Trade School reports many more calls for skilled workers in various fields than it can supply, crowded classrooms in all subjects and a large and constantly growing waiting list. At a meeting of the Bridgeport Chamber of Commerce September 15, Executive Secretary Robert A. Crosby predicted labor and housing shortages, traffic congestion, lack of adequate rail facilities and "too much governmental control" as results of the presumably impending

war boom. . . . The General Electric Co. is expanding operations at its Bridgeport plant following announcement of the plan to concentrate all electric appliance manufacturing and sales direction in Bridgeport, moving many departments from Cleveland, Ohio. The move is expected to add 2,000 employees to the Bridgeport payroll before January 1. . . . The Bullard Co., Bridgeport, now has 1,200 hands on the payroll and is operating partially with a night shift. . . . Remington Arms Co., Bridgeport, has been awarded a War Department contract for small arms ammunition at a cost of \$425,188, while Bridgeport Thermostat Co. will produce \$109,062 worth of artillery ammunition and parts. . . . Vought-Sikorsky Division of United Aircraft Corp. in suburban Stratford is building airplanes for U. S. military services at a cost of \$2,103,800. . . . Bridgeport Tool & Die Corp. has been formed at 109 Howard Avenue, Bridgeport, by Orville A. Bowen, Fred L. Ryno and J. G. Field. . . . Babcock Printing Press Co., New London, has a contract for two high-speed rotary, 64-page two-color magazine presses with combination folders and special sheet-drying equipment, for Cuneo Eastern Press, Inc., printers of "Time." . . . Fafnir Bearing Co., New Britain, has announced that on October 16 it will pay its 16th quarterly bonus to employees, amounting to 7½ per cent of each employee's earnings for July, August and September, with about

1,400 workers participating. . . . Waterbury Farrel Foundry Co. is expected to acquire the former plant of the American Ring Co. The buildings are being razed and the space will be used for storage. . . . Colt's Patent Fire Arms Mfg. Co., Hartford, is starting large-scale production of synthetic jewels, to be marketed under the trade-name "Colt-stones," marking a great expansion of its plastics department.

Bartek Returns to Detroit

John S. Bartek, formerly chief engineer of the Modern Tool Works, Rochester, New York, has been added to the Engineering Staff of the Pioneer Engineering & Manufacturing Company, 31 Melbourne Avenue, Detroit, Michigan.

Mr. Bartek was with the Pioneer Engineering & Manufacturing Company previous to his connection with the Modern Tool Works and returns to Pioneer as a specialist in threading and threading problems.

Appointed Detroit Agents

Cherron Engineering Sales, Curtis Bldg., Detroit have been appointed Detroit District Representatives for the Logan Engineering Company of Chicago and the A. W. Cash Valve Mfg. Co. The Logan "Aridifier" removes water, oil and foreign particles from compressed air, gas steam, while the Cash line consists of pressure reducing and pressure regulating valve strainers, etc.



PROGRESS

IN HIGH SPEED TAPPERS

The last few years have seen a marked improvement in high speed tapping equipment. Taps have been improved, cutting lubricants have been perfected, tolerances are being held to more rigid specifications and tapping costs are ever going down.

To take advantage of these improvements, your tapping equipment must be right up to the minute. The antiquated chuck of years ago simply will not fill the bill. Profits, too, depend upon up-to-date equipment.

PROCUNIER Engineers, in such close contact with up-to-date requirements, can offer you the finest, most up-to-date tapping equipment available. It will pay you to use PROCUNIER high speed precision tapping heads will be mailed upon request. Send for your copies today.

Catalogs No. 37 and No. 38 showing PROCUNIER "Universal" Tapping Machines, and Bulletin No. 938 illustrating PROCUNIER high speed precision tapping heads will be mailed upon request. Send for your copies today.

Procunier Safety Chuck Co.

12-14 SOUTH CLINTON, CHICAGO, ILLINOIS



Use **NATCO** Multi-Drillers For

**Accuracy - Durability
Power - Rapid Drilling**



Located in one of the country's newest and most modern Diesel engine plants this NATCO two-way right-angle multi-driller is performing a total of 88 drilling and reaming operations on the two ends and both sides of the 4 and 6-cylinder engine blocks, also shown.

This NATCO is built of two NATCO HOLESTEEL floor type units and a single stationary type fixture which is arranged to hold either of the two blocks. Each unit is arranged with a spindle box, the two boxes containing a total of 53 anti-friction bearing mounted spindles complete with nose adjustment.

One operator attends the machine and loads and unloads the blocks after the operations have been performed. The

blocks are run through the machine on the first set-up at which time the one end and one side of the blocks are drilled. These parts are then stacked until the desired quantity has been run. A second set-up is then made and the same blocks are again put through the machine, at which time the other end and other side are drilled. Production ranges from 28 to 32 blocks per hour.

NATCO multi-drillers are designed for high production multiple drilling. They provide accuracy, durability, and the necessary power for rapid, low cost, drilling.

Write for literature or call a NATCO representative to work with your engineers for a practical and economical solution of your "hole" problems.

THE NATIONAL AUTOMATIC TOOL CO.

Richmond, Indiana, U. S. A.

Chicago Office, 2009 Engineering Bldg.

Detroit Office, 409 New Center Bldg.

Investigate
NATCO Methods for
the Lowest Possible
Hole Costs!

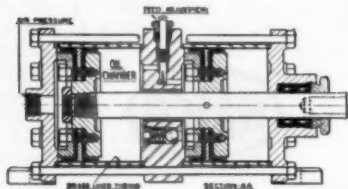
NATCO

DRILLING, BORING and TAPPING MACHINES
SOLVES YOUR "HOLE" PROBLEM

IT'S NEW

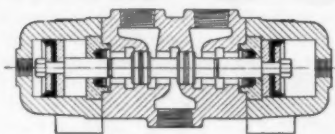
(Continued from Page 66)

rection, thus insuring easy installation even in unusual positions.



Other features of this cylinder are: Self sealing rod packing, alloy steel and nickel iron castings used throughout, male or female thread on piston rod,

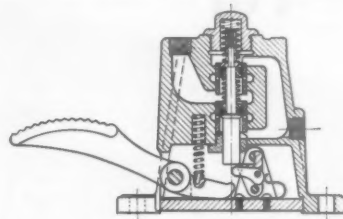
available for hydraulic oil or water, and furnished with adjustable cushions at either or both ends of stroke.



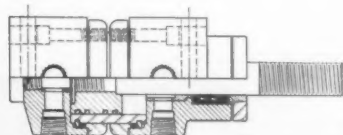
There is also a new Air Cylinder Operated Hydraulic Control Valve. Features include: Easily accessible Air Cups; end units are interchangeable for operator to return to neutral, return by spring to one end and air to the other end, and air to either end, also, body can be placed in any one of four pass

holes. There is ample capacity so that pistons shift Hydraulic Valve Piston even with reduced air pressure.

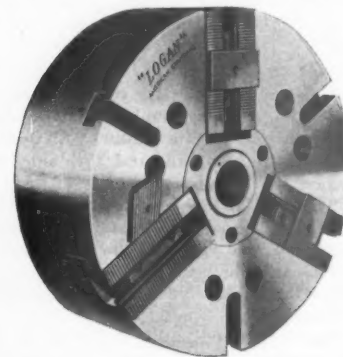
A complete new line of Foot and Hand Valves has also been developed, small and compact but with full pipe volume air flow. They are made in sizes from 3/8" to 2" pipe. Novel fea-



tures include self cleaning Valve Seals and Valve Piston Cup Packing design which permits easy removal for repairs without disconnecting pipe lines. Since all parts contacted by air pressure are made from rust-proof materials, with balanced piston design, little effort is required for operation.



The Foot Valve is designed for two combinations of cycles, up with pressure on pedal, down with removal of operator's foot, and vice versa. The Hand Valve operates on same general principle, is of same general construction, has similar features except that



there are six operating cycles from four positions of operating handle.

Logansport also presents an Air-Draulic Cylinder, designed to use a combination of air and hydraulic pressure for power. The principle, it is claimed, is revolutionary and considered to be an outstanding improvement in the cylinder field. These new Cylinders are said to provide the smooth, steady action of hydraulic power to an air operated cylinder; with the combination the piston can be accurately controlled at all speeds up to the maximum, entailing ideal operation for milling machine tables, drill spindles, sliding table and

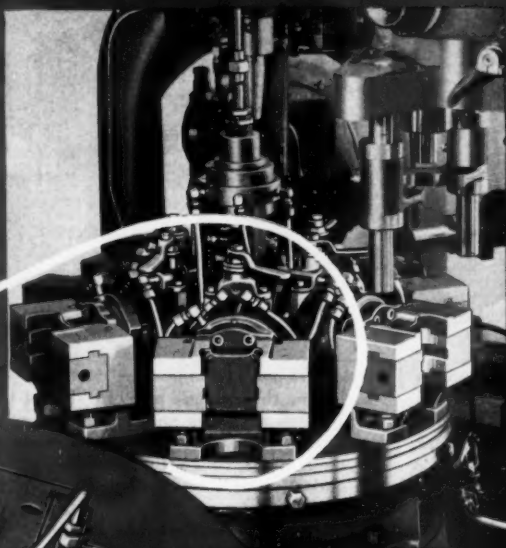
(Continued on Page 74)

AVOID COSTLY LOADING DELAYS

Logan Work Holding Fixtures are regularly furnished for bolting to indexing tables as illustrated on the machine at the right.

The work table may be indexed so that the movement of the table and the desired machine operation are entirely automatic.

The fixture is loaded at the side opposite the work operation eliminating all waste of time and cutting operating costs.



Also furnished as an individual unit for holding irregular shapes such as valve bodies, bonnets, etc. Easily interchanged false jaws simplifies the handling of various shaped pieces.

Save with -- "LOGAN"

LOGANSFORT MACHINE, INCORPORATED

302 Payson Road LOGANSFORT, INDIANA
Manufacturers of Air and Hydraulic Devices, Chucks, Cylinders, Valves, Presses and Accessories

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At Last!



**A POSITIVE
ROLL GRIP
KEYLESS**

**DRILL
CHUCK**

that fills a
long-felt need

Check these
advantages:

- 1.—A chuck that will not let your drills slip.
- 2.—100% keyless.
- 3.—The heavier the load, the tighter it grips.
- 4.—No more drill shanks damaged by chucks.
- 5.—Yes! The tapered shanks are tempered.
- 6.—A slight twist of the wrist releases drill.
- 7.—Scientifically designed—ruggedly constructed.
- 8.—Will run true and remain so during its life.
- 9.—Unconditional one-year guarantee (barring abuse).

A folder giving prices and complete details will be mailed to you just for the asking.

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12281 Turner Avenue Detroit, Michigan

**YOU ARE INVITED
TO VISIT OUR
SHOP**



if you come to Detroit.

No secrets — just proper equipment and long experience.

We are represented in your city.



**NATIONAL TOOL
SALVAGE CO.**
DETROIT, MICH.

IT'S NEW

(Continued from Page 72)

other tools. The Air-Draulic cylinders secure the following cycles: Feed out—rapid return; rapid traverse out and feed—rapid traverse; feed in—rapid traverse out; rapid traverse in and feed—rapid traverse; feed in both directions.

Chucks. "Logan" chucks, while retaining former features, have been further refined and improved with a view toward greater chucking accuracy and operating efficiency. Bulletins on all of these innovations are available to industry.



HANDY ANDY SAYS

(Continued from Page 42)

Manufacturer advertises even when producing to capacity. It's like putting something aside for a rainy day; when the storm breaks the consistent advertiser is solidly entrenched in the buyers' minds.



Not, mind you, that I am talking depression. I don't believe in 'em! The prospect for America is bright enough despite the clouds of war; we're merely taking a detour to the super-highway of Prosperity. Then, watch our dust! However, we must not lose sight of the fact that, for a time at least, our export trade is going to suffer somewhat, so, we'll have to develop and boom our home markets. We can do it. The machine and tool industries are

going to be busy, for if we can't ship munitions there is no reason why we shouldn't sell equipment. And, that portends a shortage of skilled labor, opportunities for the ambitious and progressive. There are, however, some millions of potential buyers to be put back into gainful employment, and the sooner we develop new industries, or expand existing ones, the sooner they'll be making money to buy that increase in product which spells a real boom. We are headed for it, and, by intelligent handling, should be able to sustain it. Let our manufacturers advertise their wares, so that their names are kept before the public eye, let us all drink deep from the Spring of Enthusiasm, and America scales another rung in the ladder of world leadership.

Yours for Progress
Handy Andy.

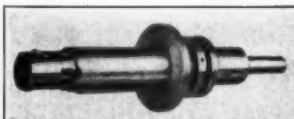
P.S.

Off again, on again, gone again, Finnegan. The Show was on, the Show was off; now we're going to have our Congress regardless. Can't stop this A.S.T.E. nohow. But gosh! I had to scrap about everything written, and when I think of how hot it was! Oh well, let's all get together for a bang up meeting; fun, frolic and education. We meet in Cleveland as per schedule, and that's that, the Hounds included. Let's go!

"Do."

**REVOLVING TAP
WITH
BORING HEAD**

Time Saving



Money Saving

COMBINATIONS

Many time and money saving combinations employing collapsible Taps, Reamers, Boring Tools, etc. have been designed successfully by

**The
Rickert-Shafer Co.**

Erie, Pa.

**THE M-B "SUPER-SPEED"
PNEUMATIC GRINDER
MODEL S.S.-S.R.**

THRILLING
SPEEDS



AMAZING
POWER

Steel Construction Throughout
POSITIVE QUICK ACTING AIR
CONTROL VALVE

Operates on Air Pressures of
40-100 pounds

The ONLY Hand Grinder with spindle speed of
100,000 R.P.M. on 100 pounds air pressure

Other Models, also Air Line Filters and
Automatic Air Line Lubricators

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You Can Use **SUNNEN HONING**

It's the Modern Method of Finishing Internal Cylindrical Surfaces . . . In hundreds of plants Sunnen Precision Honing Equipment is saving time, money and labor.

Profitably

A Few Examples of Why Sunnen Honing is Being Used!



Diesel Engine Fuel Injector Cylinder

To replace production lapping because honing removes stock faster and the correction of minute errors is more positive. (Left)



Punch Press Parts

To facilitate the assembly of parts, a few high spots caused by punch press operations and hardening are quickly removed by honing. (Left)

To increase the life of bearing parts by improving the quality of surface finish with honing, thus reducing wear of both pistons and cylinders. (Right)



Aviation Hydraulic Cylinder

To eliminate special grinding set-ups when only a few parts are to be finished, thus saving time and money in making fixtures. (Right)



Miniature Motors



Molded Composition Pulleys

To remove the taper from hole to obtain full bearing surface. Molded composition can be easily honed to a smooth finish. (Left)



Mild Steel Clevis

To maintain alignment of the two bearing surfaces and accurately finish the holes to size. (Left)

To add sales appeal to a product by putting accurate, "super-smooth" finishes on the internal cylindrical surface. (Right)

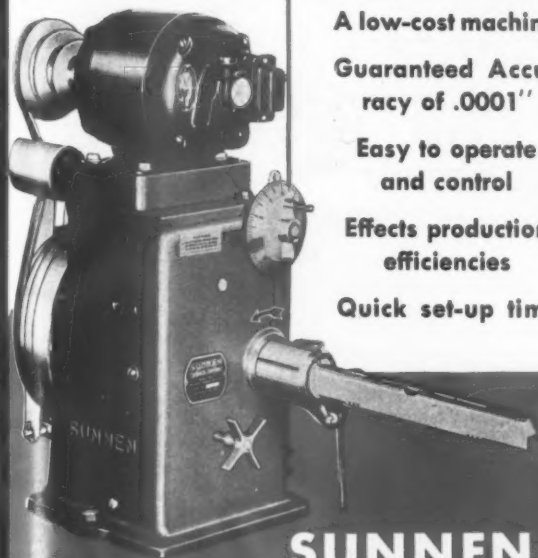


Drill Jig Bushing

To obtain "super-smooth" finishes and obtain extremely close limits of accuracy for both roundness and straightness. (Right)



Hardened Steel Ring Gauge



A low-cost machine

Guaranteed Accuracy of .0001"

Easy to operate and control

Effects production efficiencies

Quick set-up time

SUNNEN

Model "MA" 4-Speed
**PRECISION HONING
MACHINE**

Investigate the Many Profitable Uses in Your Plant!

Above we show just eight reasons why industrial firms are using Sunnen Honing wherever there's an internal cylindrical surface from .245" to 14 1/2" in diameter to be finished. There are hundreds of other hole finishing problems that are being solved by Sunnen Honing.

Sunnen Honing is ideally suited for assembly operations, repair and salvage work, production work, tool room, experimental and job shop work. New uses and applications are being reported daily.

Replaces Costly Finishing Methods

Low in first cost, low in operating cost. Sunnen Honing replaces costly hole finishing methods—yet assures accuracy within .0001", super-smooth finish and positive alignment. The interchangeability of mandrels and stones provides a complete range of every decimal size.

Let Us Prove It — FREE

Send us several samples of parts having internal cylindrical surfaces which you are now finishing by other methods and tell us your problems. We'll hone them to your specifications and return them with complete operation data.

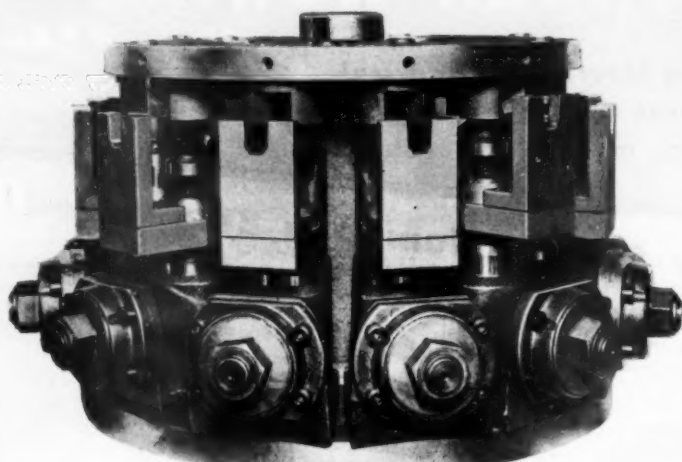
Write today for Complete Bulletin on Sunnen Precision Honing. It's Free. No obligations.

SUNNEN

SUNNEN PRODUCTS COMPANY

8002 Manchester Avenue

St. Louis, Mo.



Multiple index fixture to locate and drill hole in boss of brake lever.

**REDUCE LOADING
TIME WITH SWARTZ
LOCKS**

**COMPACT, POSITIVE
CLAMPING**

MORE PIECES PER HOUR

**ALL LOCK PARTS ARE
HARDENED AND GROUND**

SWARTZ TOOL PRODUCTS Co., Inc.

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& Equipment Co.

FLOATS
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ZIEGLER

ROLLER DRIVE

Floating Holder

FOR

**TAPS — REAMERS
COUNTERBORES
DIE-HEADS**

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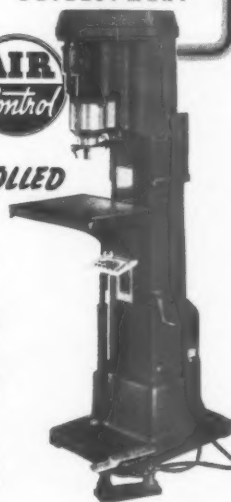
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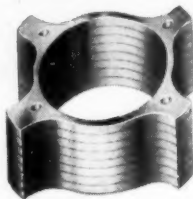
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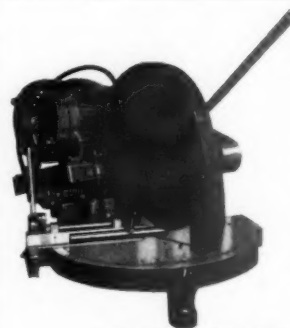
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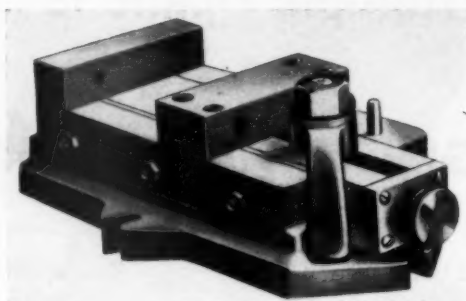
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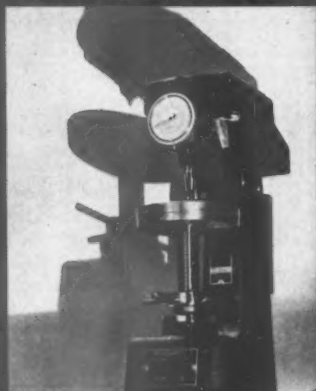
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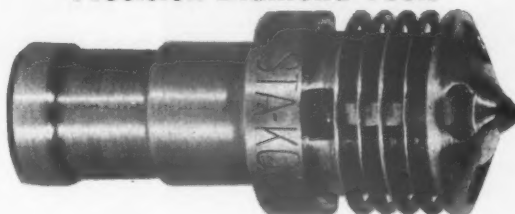
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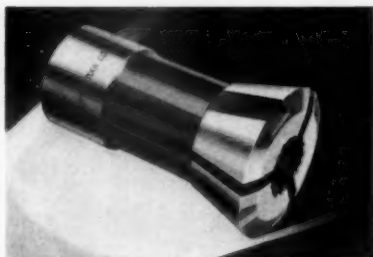
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